NETWORK WORLD

The Newsweekly of User Networking Strategies

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Senate votes in favor of RBHC bill

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The Senate last week approved a bill that would allow the RBHCs to manufacture telecommunications equipment, marking the first time such a bill has passed a full vote by the body.

Strong Senate support for S. 173, The Telecommunications Equipment Research and Manufacturing Competition Act of 1991, introduced by Sen. Ernest Hollings (D-S.C.), indicates Congress could override a veto by President Bush, whose administration says the bill's protectionist measures could hamper trade negotiations abroad.

But the Senate bill, which now goes to the House, must still overcome the congressional obstacles that have stalled similar equipment manufacturing legislation in the past. According to Senate aides, the House has roughly a year and a half to pass the Hollings bill before it expires.

Congressional aides anticipate the Hollings bill will land in the Telecommunications and Finance Subcommittee, chaired by Rep. Edward Markey (D-Mass.). Whether the bill, or another like it, is taken up by the subcommit-

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James Robinson of American Express gives keynote address at ICA conference. See ICA coverage on pages 1, 2, 6 and 8.

Finalist in ICA competition details design of internet

Presents paper at Call for Innovation session.

By Paul Desmond
Senior Editor

ANAHEIM, Calif. — Delmarva Power & Light Co. last week detailed how it constructed a wide-area multiprotocol internetwork that integrates local-area network, SNA and other data traffic, and outperforms the separate nets it replaced.

John Scoggin Jr., supervisor of network operations at Delmarva Power, presented a paper on the company's internetwork at the International Communications Association (ICA) conference here. His entry was one of 12 finalists in the ICA's Call for Innovation competition, an event cosponsored by *Network World* to honor users for outstanding implementations of communications technology.

Delmarva Power is a regional utility based in Newark, Del. It has standardized on Cabletron Systems, Inc. Ethernet hubs and Wellfleet Communications, Inc. bridge/routers to build a star-topology network using 672K bit/sec links radiating out from its

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DEC revises strategy for supporting OSI

Advantage-Networks lets users pass OSI data over DECnet, TCP/IP nets or multiprotocol backbones.

By Jim Brown
Senior Editor

ANAHEIM, Calif. — Digital Equipment Corp. last week announced a significantly revamped plan for adding Open Systems Interconnection support to DECnet that obsoletes its 4-year-old DECnet Phase V program.

DEC said the new strategy will make it easier for users to maintain existing DECnet Phase IV and Transmission Control Protocol/Internet Protocol networks and applications while migrating to OSI. But some analysts called DEC's strategy shift a marketing ploy to buy time to develop OSI support for its proprietary VMS-based systems.

DEC unveils multiprotocol router plans, see page 52.

The new strategy, dubbed Advanced-Networks, was announced here at the International Communications Association's (ICA) 44th Annual Conference and Exposition. It enables users to pass data from OSI applications over existing DECnet or TCP/IP networks. The strategy also lets users build multiprotocol backbones capable of supporting any mix of DECnet, TCP/IP or OSI data.

Under Advantage-Networks, DEC will provide the application

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IBM slashes Token-Ring prices

	Previous price	New price
4M bit/sec Token-Ring adapter for Micro Channel Architecture bus	$772	$395
4M bit/sec Token-Ring adapter for AT bus	$669	$395
16/4M bit/sec Token-Ring adapters	$957	$895
Multi-Station Access Unit	$748	$630

See story, page 2

SOURCE: IBM, WHITE PLAINS, N.Y.
GRAPHIC BY SUSAN J. CHAMPENY

MCI shares frame relay, net direction

By Anita Taff
Washington Bureau Chief

ANAHEIM, Calif. — MCI Communications Corp. last week said it is developing a new cell-based switching platform that will enable it to support next-generation data services such as frame relay.

At a briefing here during the International Communications Association's annual conference, MCI said the cell-based platform would enable it to launch a frame relay service in 1992. MCI said it plans to demonstrate the service and initiate customer tests later this year.

MCI also announced Focus-Net, a new network management offering that will enable customers from a single workstation to monitor customer premises equipment and MCI transmission services.

MCI said the new cell-based

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NETLINE

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START-UP UNVEILS adapters that support FDDI over shielded twisted-pair nets. Page 6.

CABLE & WIRELESS unveils plans for domestic frame relay service with int'l links. Page 6.

TARIFF 12 USERS OPT not to form user group. Page 8.

CARRIERS TAKE STEPS to extend reach and ease use of int'l virtual nets. Page 8.

DEC EXTENDS network management and document architectures. Page 8.

GUPTA LAUNCHES QUEST to give PC users access to host-based SQL data. Page 8.

PA. BLUE SHIELD dumps point-to-point terminal net for bridged LAN setup. Page 39.

NEWSPAPER

FEATURE

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Savings, quality, backup figure in bypass choice

By Edwin Mier
Special to Network World

"Bypass" is a dirty word to local telephone companies, but to many network managers, especially those in large organizations, bypass often spells relief.

This Buyer's Guide focuses on bypass equipment — transmission products that support voice or data network transmissions without using the facilities of the local telephone company.

Specifically, this guide covers equipment that supports transmission over distances of at least a mile and typically up to 25 miles, and data rates of at least 64K bit/sec. It will not, however, cover bypass services, which will be examined in a separate Buyer's Guide later this year.

Radio-based bypass equipment includes gear

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Software centralizes control of IBM CICS environments

IBM package enables users to manage local and remote regions, and automate routine functions.

By Paul Desmond
Senior Editor

WHITE PLAINS, N.Y. — IBM last week announced management software that will enable users to control local and remote CICS environments from a single console and automate many routine CICS-related functions.

IBM's new CICS Automation Option/MVS, which works with NetView and other IBM management tools, is the first IBM product to allow users to centrally perform CICS control functions. Among its features is the ability to monitor sessions between separate CICS programs running on the same or separate IBM hosts, be they local or remote.

CICS is an IBM host transaction processing monitor that manages terminal-to-host sessions. Terminals sign on to CICS through VTAM, then CICS takes care of such tasks as executing programs, handling I/O and providing access to data bases.

CICS Automation Option runs on a host mainframe as an application under Automated Operations Control/MVS or the older Automated Console Operation NetView SolutionPac, both of which are more general tools for automating the functions required to run an MVS subsystem

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ICA hosts quieter, more contemplative conference

Attendees urged to reflect on lessons of past.

By Wayne Eckerson
Senior Editor

ANAHEIM, Calif. — Quiet is the best word to describe the International Communications Association's (ICA) 44th Annual Conference and Exposition held here last week.

The crazed bustle of past shows — where users clogged aisles to glimpse an ever-expanding array of products and swarmed technical sessions to make sense of it all — seems to have given way to a more mature, contemplative mood.

Indeed, the theme of this year's show, "Back to the Future: Yesterday Through Tomorrow in Network Applications," called users to reflect on the lessons of the past instead of blindly chasing a riptide of new technologies.

And it seems that users have a lot to contemplate. The 1980s ushered in a dizzying number of technological, regulatory and organizational changes that irrevocably changed the nature and scope of their jobs.

To bring some order to the chaos of the last decade, users are reassessing fundamental assumptions about the deployment of new technologies, relationships with vendors and their role as technologists.

(continued on page 51)

IBM pares prices of 4M bit/sec Token-Ring cards

By Bob Brown
Senior Editor

WHITE PLAINS, N.Y. — IBM last week slashed the prices of its 4M bit/sec Token-Ring Network interfaces by more than 40%, a move analysts said could trigger price cutting in both the token-ring and Ethernet markets.

IBM, which sold more than half of all 4M bit/sec token-ring cards shipped worldwide last year, said the cuts would bring its prices more in line with Ethernet products and help the company meet the needs of small firms and departments within large companies.

"We'd like to be able to make the Token-Ring attractive to customers who perhaps could not cost-justify our solution prior to this," said Roger Ehrig, product administrator in systems marketing for IBM's U.S. marketing division in Atlanta.

"We'd like to have all the customers who might have considered Ethernet as a solution take a strong look at the advantages of Token-Ring," he added.

Susan Frankle, an analyst at International Data Corp. (IDC), a Framingham, Mass., market research firm, said IBM's challenge to Ethernet vendors could cause price slashing in that market, even though margins are already razor thin. IBM's price cuts will

(continued on page 52)

Briefs

Internet opened. Advanced Network & Services, Inc. (ANS), a nonprofit firm in Elmsford, N.Y., announced last week that it has formed a taxable subsidiary, ANS CO + RE Systems, Inc., to allow private sector companies to send commercial data across portions of the Internet.

ANS, founded by IBM, MCI Communications Corp. and Merit, Inc., supplies network services for the Internet, which links 2,800 networks across the country. Because much of the Internet is federally funded, rules prohibit the transmission of commercial traffic at the taxpayer's expense. ANS CO + RE Systems will offer 56K bit/sec, T-1 and T-3 links to the Internet to any commercial company as well as research and education users. Flat-rate charges for CO + RE services will average $25,000 to $30,000 per year for 56K bit/sec, $55,000 to $60,000 per year for T-1 and about $300,000 per year for T-3.

AT&T switched 384 to go global. During a interview with *Network World* last week at the International Communications Association show in Anaheim, Calif., Jeanne Marie Jarka, AT&T's product marketing manager for Switched Digital International (SDI), said the carrier plans to begin offering switched 384K bit/sec service internationally during 1992. AT&T currently offers SDI service at speeds of 56K and 64K bit/sec. Jarka said that 384K bit/sec service will be attractive because the transmission speed is becoming a de facto standard for videoconferencing.

FDDI test center gains members. The Advanced Networking Test Center, a Sunnyvale, Calif., facility dedicated to testing multivendor interoperability of Fiber Distributed Data Interface products, last week announced 12 new members: AT&T Computer Systems, Ascom Gfeller, Ltd., Compu-Shack, Crosfield, Digital Technology, Inc., Fujitsu, Ltd., ICL North America, SBE, Inc., Scitex Corp., Summit Microsystems Corp., Tekelec, Inc. and 3Com Corp.'s Network Adapter Division. They bring the number of members to 35.

AT&T opens net control center. AT&T last week dedicated a new $35 million network control center in Denver that will manage the operations of AT&T's network for states west of the Mississippi River. On a typical business day, the center will oversee about 65 million calls entering or leaving AT&T's long-haul network. For the past two years, AT&T has been consolidating seven regional centers into two — the center in Denver and a center that will open in Conyers, Ga., later this year to manage AT&T's network east of the Mississippi River. AT&T also operates a Worldwide Intelligent Network Operations Center in Bedminster, N.J., that is responsible for managing domestic and international calls as they flow through the AT&T network, as opposed to those calls entering or leaving the network handled by the regional centers.

1,000 jobs eliminated. Fleet/Norstar Service Corp. (FNSC), the data processing and operations arm of Fleet/Norstar Financial Group, Inc., last week announced that it may lay off as many as 1,000 Bank of New England (BNE) data processing and operations personnel during the next 18 months. The layoffs will come as FNSC consolidates the data processing and back-room operations of BNE and Fleet/Norstar, the Providence, R.I.-based bank that purchased the failed BNE in April. FNSC plans to close BNE data centers in Malden, Mass., and Portland, Maine, and manage all data processing operations out of Albany, N.Y.

US Sprint launches global fax net. US Sprint last week announced a dedicated worldwide Group III facsimile net that it says will offer multinational customers fax delivery at rates 10% to 30% below competing services. Companies can begin using Global SprintFAX to fax to over 150 countries on July 1. US Sprint will initially open local network access centers in Japan, the U.K. and the U.S., and plans to open more centers around the world. Users can access the center via dial-up or dedicated lines. Users pay a $25 monthly account charge and first and additional page rates for transmissions.

DCA lays off 5% in reorganization. Digital Communications Associates, Inc. (DCA) last week laid off 50 employees, nearly 5% of its 1,110-member work force, after a reorganization of the company's business units. Engineering and product management functions for five DCA business units were consolidated into one.

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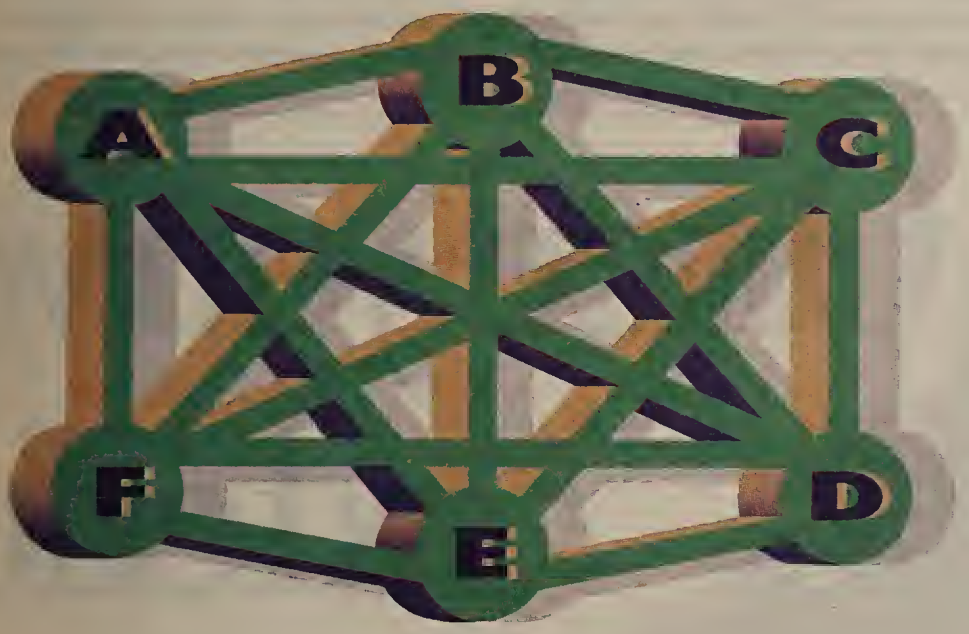
Traditional LAN Internetwork



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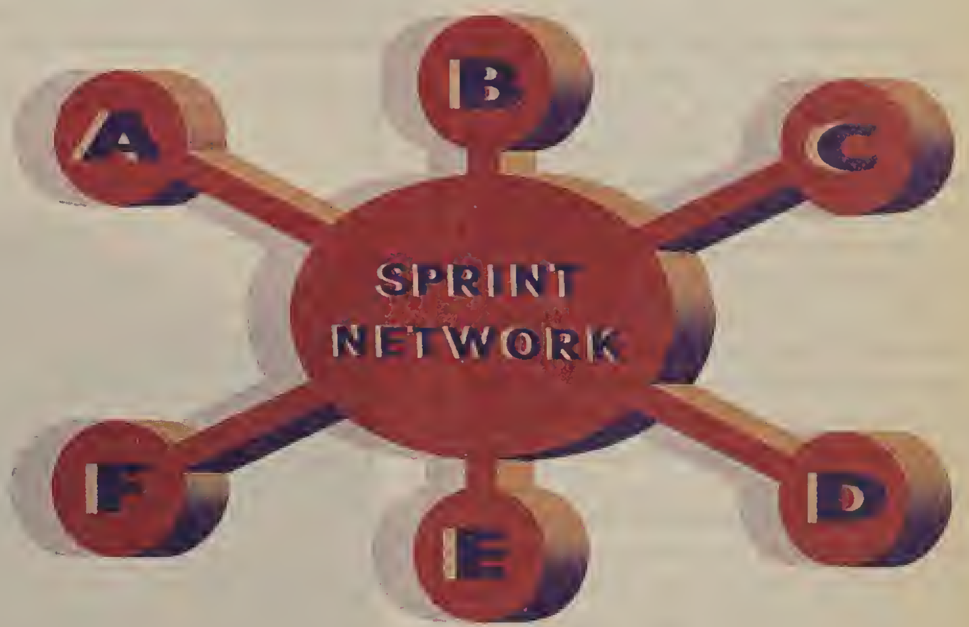

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1988 *Sprint awarded 40% of Federal Telecommunications System 2000 contract.* 1989 *Sprint completes the world's first and largest privately-owned transatlantic fiber optic cable.* 1990 *Sprint announces the first commercial video services to the Soviet Union.*

Start-up unveils large wireless phone system

By Bob Wallace
Senior Editor

ANAHEIM, Calif. — SpectraLink Corp. last week introduced at the International Communications Association conference here a wireless telephone system that can support as many as 2,000 lines and 400 simultaneous conversations.

The SpectraLink 2000 Pocket Communication System (PCS), the first product from the Boulder, Colo.-based start-up, is a cellular switch adjunct for private branch exchanges and Centrex systems that operates in an unlicensed, public-use frequency range designated by the Federal Communications Commission.

The system is designed for organizations such as hospitals, factories and convention centers whose employees are frequently away from their desks but rely on telephones for internal and external communications.

"Our wireless switching system [enables] employees to move about within their building and conduct business over the telephone without having to return to their office," said William Palumbo, SpectraLink's sales and marketing vice-president.

The SpectraLink 2000 PCS comprises a 6-ft.-high Main Control Unit (MCU), smoke detector-sized radio transmitter/receiver Remote Cell Units (RCU) that have to be strategically placed throughout a building and six-ounce 5- by 2- by 1-in. Pocket Telephones.

The system uses spread-spectrum radio technology and frequencies in the 902- to 928-MHz range. This technology distributes transmissions over a wide frequency band (26 MHz) and then gathers them into their original form at the point of reception.

According to the company, spread-spectrum technology is more efficient than using the more narrow 15- to 20-KHz frequency band because it is less susceptible to interference and interception.

The heart of the SpectraLink 2000 is the MCU, which can be connected via analog lines to any port on a PBX or remote Centrex switch and supports the existing system's full range of calling features.

The MCU can have as many as four 11-slot shelves, each of which can house interface cards to link the device to existing switching systems and line cards used to support links to RCUs. The RCUs are linked to the MCU via two-pair twisted-pair wire and can be located as far as 6,000 feet away.

The Line Interface Card supports as many as 24 ports, while each Remote Interface Card supports 10 RCUs. One shelf in each MCU must also house a single Master Processor Card.

Three MCUs can be interconnected to support a maximum of 2,000 lines. MCUs can be located up to 6,000 feet from the customer's existing switching system.

A single RCU, which provides the link between the Pocket Telephones and the MCU, covers between 5,000 and 50,000 square feet. The SpectraLink 2000 PCS supports as many as 280 RCUs, which together can cover between three million and 15 million square feet. The Pocket Telephones ring at the same time as the telephones at employees' desks.

A switchboard operator can forward calls to employees who have switched off their telephone by entering a four-digit screening code and then connecting the call to the Pocket Telephone, which will ring.

Employees can put calls on hold, forward or transfer them and initiate conference calls from the Pocket Telephones. They can also redial and camp on calls.

The SpectraLink 2000 PCS will be generally available in the fourth quarter. The average price for the system is $25,000 for each 100,000-sq.-ft. area covered. Each Pocket Telephone costs $645. ☑

Schools mull construction of T-3 net for use by telecom students

By Bob Wallace
Senior Editor

ANAHEIM, Calif. — Thirty leading schools discussed a proposal here last week at the International Communications Association (ICA) conference to build a nationwide T-3 net that would give students hands-on network experience.

As conceived, the Telecommunications Education Research Network (TERN) would be used as a test bed to conduct voice/data research and laboratory experiments to study the use, integration and interoperability of a wide array of applications and networking technologies.

TERN would provide universities with a source of research funds from user- and vendor-initiated projects, enhance the quality of telecommunications programs by giving access to the latest technology and enable schools to attract topflight faculty and students.

"Today, we rely heavily on vendor donations for telecommunications laborato-

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ry equipment that is usually already fully depreciated and out of date," said Leon Montgomery, a professor with the University of Pittsburgh's information sciences and telecommunications department. "With TERN, we're looking for the latest broadband networking equipment for our students."

The University of Pittsburgh and The Saturn Group, a Pittsburgh-based consultancy headed by former ICA President James Sobczak, are spearheading the project. The group last week received $15,000 in funding from the ICA Foundation.

University of Pittsburgh officials presented ICA attendees with a letter outlining the TERN funding proposal. The plan calls for vendors to provide the bulk of the funding with interested schools picking up the balance. Representatives from colleges and universities were asked to solicit approval from their institutions and return the document as soon as possible.

TERN and the funding proposal were received warmly at the conference.

"We won wide support at the meeting," Montgomery said. "Almost everyone in attendance has agreed to take the letter back to their school for approval."

Five schools, including the University of Pittsburgh, the University of Colorado at Boulder and the Polytechnic Institute of New York in Brooklyn, have already agreed to participate in the effort.

As part of the TERN plan, supporting schools said they want to establish an independent, nonprofit organization to manage the interuniversity network and administer research projects conducted on it.

The group would be governed by a board of directors comprised of key participating universities and organizations making major contributions in either equipment, service or grants. Vendors and large users will be expected to fund their own research projects. The long-term goal is to generate sufficient research revenues to make TERN self-funding.

Colleges and universities with telecommunications programs are looking to expand the scope of their network training. "Today, for many schools, training is restricted to the confines of our labs," Mont-

(continued on page 54)

Zale farms out net operation to IBM subsidiary

By Maureen Molloy
Staff Writer

IRVING, Texas — Zale Corp. last week said it has awarded Integrated Systems Solutions Corp. (ISSC), an IBM subsidiary, a 10-year contract to manage its data center network operations.

Zale, the nation's largest retail jeweler, said the outsourcing agreement calls for ISSC to manage the retailer's data center, point-of-sale, credit administration and distribution operations.

By off-loading routine data center operations to ISSC, the user can focus on developing strategic business applications, according to David Karney, Zale's vice-president of MIS. "By blending our retail knowledge with IBM's technological and retail expertise, we expect to significantly enhance our competitive edge," Karney said. "The opportunity to apply advanced technology to our business strategy will now be done more easily and more cost-effectively than we could do on our own."

> By off-loading routine data center operations to ISSC, the user can focus on developing strategic business applications.

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Karney declined to discuss specific financial details or project savings stemming from the outsourcing pact.

Under the agreement, ISSC will remotely manage Zale's mainframe data center here as a regional IBM facility by linking it to an ISSC data center in Lexington, Ky., via leased lines. IBM will extend employment offers to the 90 Zale information systems staffers now responsible for providing data services.

ISSC will also be responsible for the user's disaster recovery operations, as well as providing end-user support for some 1,500 desktop systems spread across the company and personal computers at 2,000 Zale stores. Although Zale will retain control of roughly 100 employees responsible for developing mainframe applications, a number of IBM employees will be brought in to assist in developing strategic applications.

Zale's data center consists of a single IBM 3090 host, which is managed by NetView. IBM 3684 POS devices at retail sites are being replaced with 80386-based IBM-compatible personal computers.

Communications from the stores to the mainframe is provided via dial-up links. The data center's host polls each store nightly to collect sales data and then downloads pricing and inventory information back to the workstations.

Karney said the outsourcing agreement will help Zale maintain its position as the nation's largest retail jeweler by helping the company achieve business goals through advanced technology.

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Internet monitor is firm's first LAN mart entry

By Eric Smalley
Senior Editor

MARLBOROUGH, Mass. — Concord Communications, Inc. this week plans to enter the local-area network management market with the introduction of a combination multisegment Ethernet monitor and protocol analyzer.

The company's Trakker — which the company calls an internet monitor — collects data on all nodes and segments of interconnected LANs at every protocol level in real time, according to Michael Zak, Concord Communications' vice-president of marketing.

Trakker consists of remote Ethernet segment monitors and a central management application that runs on a Sun Microsystems, Inc. SPARCstation. The product's segment monitors are each powered by a MIPS Computer Systems, Inc. 25-MHz R3000 Reduced Instruction Set Computer microprocessor, providing 20 million instructions per second of processing power.

The segment monitors include up to 16M bytes of memory, as well as software for collecting and processing data and forwarding information to the management station in response to queries or alarm events. The software is based on the Simple Network Management Protocol, but the Management Information Base contains 4,000 data objects, far more than any comparable software, company officials said.

"The [segment monitor] can listen to the network faster than any monitor available," said Michael Howard, president of Infonetics Research Institute, Inc., a San Jose, Calif.-based market research firm. "The basic box is a breakthrough. It can listen to everything that goes by on the network."

The management station software correlates the information processed by the segment monitors, allowing users to track packets across multiple segments. The software monitors communications between two or more nodes, tracking the establishment of connections.

Trakker records information such as retransmissions, duplicate addresses, timeouts, disconnects, flow control messages and failed connection attempts.

With the breadth of network information Trakker provides, it will be a good platform for sophisticated network management applications, said John Patterson, director of networks and technical services for Tufts Univeristy in Medford, Mass., which is beta-testing Trakker.

"When mature and operational, Trakker could provide us with a substantial amount of the network management functions we're looking for," he said.

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Start-up offers FDDI adapters for shielded twisted-pair local nets

By Bob Brown
Senior Editor

SAN JOSE, Calif. — Network Peripherals, Inc. last week announced a line of FDDI network adapters and a wiring concentrator that support data transmission over shielded twisted-pair wiring at 100M bit/sec.

The products give users an option to run Fiber Distributed Data Interface to the desktop using existing low-cost shielded twisted-pair wiring vs. installing costly fiber or limiting FDDI for use as a backbone technology.

Network Peripherals' new line of FDDI adapters support a wide range of desktop computers, including those based on the IBM Personal Computer AT and Extended Industry Standard Architecture (EISA) buses, as well as workstations based on the Sun Microsystems, Inc. S-Bus and VMEbus.

The adapters support various software drivers, including Novell, Inc.'s NetWare, Microsoft Corp.'s LAN Manager and several versions of Unix.

The new line of adapters will be ready to ship in August, coinciding with the availability of DEC's FDDI-over-shielded twisted-pair adapter for its DECstation 5000 workstations that the company unveiled last week.

The vendors' products would be the first such offerings to market, analysts said.

Network Peripherals' product launch comes on the heels of last month's announcement by DEC and four other vendors of a specification supporting 100M bit/sec FDDI transmission rates over shielded twisted-pair wire. Those vendors plan to submit the specification to the American National Standards Institute for potential adoption as a standard ("Spec details use of FDDI over shielded twisted pair," *NW*, May 27).

According to Network Peripherals, its new products support the specification.

Gordon Stitt, Network Peripherals' vice-president of marketing and sales, said the specification proves that the technology is feasible.

"We've done enough interoperability tests, like at the [INTEROP 90 Conference and Exhibition], to prove that FDDI over [shielded twisted-pair] works," Stitt said.

However, he declined to identify any end users that tested the new products.

Pricing for Network Peripherals' new FDDI adapters for shielded twisted-pair networks varies. For the NP-SB/S and NP-AT/S adapters on S-Bus and AT bus class

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Carriers in 3 countries to link domestic frame relay offerings

Hong Kong, U.K., U.S. carriers also to air virtual net service.

By Barton Crockett
Senior Editor

ANAHEIM, Calif. — Cable & Wireless Communications, Inc. last week revealed plans to roll out a domestic frame relay service this year that will be linked to comparable offerings of its sister carriers in Hong Kong and the U.K.

The carrier also will introduce a virtual network service on July 1, which it plans to extend to virtual net services offered by London-based Mercury Communications, Ltd. and Hong Kong Telecom International, Ltd., company officials told *Network World* during the International Communications Association 44th Conference and Exposition here last week.

According to Thomas Larson, director of sales and marketing for Cable & Wireless, the carrier plans to formally announce the frame relay service in the third quarter and will begin beta tests at that time. He said the service is scheduled to be commercially available in the fourth quarter.

Frame relay is an interface specification for a packet-switching service that is intended to provide high-speed links for applications such as local-area network bridging.

Cable & Wireless will support frame relay via Northern Telecom, Ltd. DPN packet switches in Atlanta, Chicago, Dallas, Los Angeles, New York, San Francisco and Washington, D.C. that will be collocated with equipment the carrier uses to provide private-line and switched voice services.

Larson said Mercury and Hong Kong Telecom also plan to announce frame relay services this year and the three carriers' plan to interconnect the services. Interconnection will be made easy, Larson said, because all three carriers will support Northern Telecom DPN packet switches using the same frame relay software.

Cable & Wireless' frame relay service will support access speeds up to T-1 in the U.S., and up to 2M bit/sec in Hong Kong and the U.K. Company officials said pricing for the service has not been finalized, although Larson said that in the U.S. flat-rate pricing will be offered.

According to Gabriel Battista, Cable & Wireless' executive vice-president and chief operating officer, the carrier's initial virtual network service will support only basic features, such as customized dialing plans, user-programmable access codes and volume discounts. The service will be linked to international virtual net services from Hong Kong Telecom and Mercury.

Larson said Cable & Wireless' global presence will give it an edge. Not only will the firm be able to act as a single point of contact for providing global net services, it will be able to support these services via a consistent technical platform.

A little healthy competition

On the frame relay front, however, some analysts argued that BT North America, Inc. and US Sprint Communications Co. will offer global frame relay services that will be at least as robust as Cable & Wireless' service.

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Domestic, foreign carriers boost int'l virtual services

Changes extend reach and ease use of services.

By Barton Crockett
Senior Editor

ANAHEIM, Calif. — Domestic and foreign carriers last week announced several new international virtual network services and enhancements that greatly extend the reach and ease of use of global nets.

At the International Communications Association's 44th Annual Conference and Exposition here, AT&T said it now supports switched access to its Global Software-Defined Network (SDN). In addition, the carrier recently extended Global SDN service to Canada and Japan, and said it plans to offer Global SDN in Singapore during the third quarter.

Meanwhile, national carriers from France and the Netherlands detailed plans to roll out new international virtual net services by year end. And US Sprint Communications Co. confirmed that its Global Virtual Private Network (GVPN) service came on-line May 1, several months later than planned.

"Six months ago, users were saying [international virtual nets] were all talk," said Daniel Briere, president of network consultancy TeleChoice, Inc. in Montclair, N.J. "Now, it's no longer potential, it's reality."

AT&T is supporting switched Global SDN access in order to make the service's features as equivalent as possible to its domestic SDN service, according to Bill Evans, Global SDN product marketing manager.

Users have been able to dial toll-free numbers in order to access corporate SDNs or to link low-volume sites into domestic SDNs via dial-up lines for years. Now these same features are available internationally.

Previously, users could only access Global SDN via private lines linking their offices to AT&T points of presence.

Evans said the addition of off-net access could be particularly beneficial internationally because time zone differences often force users to make business-related international calls from home.

Expecting an upsurge

Global SDN service to Japan and Canada, which began June 1, could cause a big surge in demand for the offering because these countries are major end nodes for international traffic from the U.S.

Global SDN service to the U.K. is also now available, and AT&T expects to commence service with 15 foreign carriers by early 1992.

Andrew Burroughs, vice-president for global marketing at US Sprint's Sprint International division, said the new GVPN service supplements International Virtual Private Network service the carrier had already provided to the U.K. and Hong Kong.

GVPN is an enhanced virtual net service that supports clear-channel, switched 64K bit/sec service and advanced calling features such as automatic number identification and network ring-again.

Internationl VPN is a stripped-down virtual net service that supports custom dialing plans and dial access codes.

A French connection

France Telecom announced plans at ICA's conference to begin offering in conjunction with AT&T international virtual net service to the U.S. within a few weeks. Jacques Cauchy, France Telecom's director of international service marketing and product development, said the carrier hopes to begin international virtual net service with MCI Communications Corp. in October and, a few weeks later, with US Sprint.

Also at the ICA conference, the Dutch carrier PTT Telecom, BV, in conjunction with AT&T, MCI and US Sprint, said it plans to begin beta tests of its international virtual net service to the U.S. in September and commercial service by year end. ◻

Effort to form Tariff 12 user group stalls at gate

By Anita Taff
Washington Bureau Chief

ANAHEIM, Calif. — Efforts to form a Tariff 12 user group stalled last week after several users meeting here decided that informal gatherings are adequate for sharing concerns about the custom network deals.

The group of users had initially scheduled the meeting with the hope of drawing up a charter and officially establishing a permanent user group. Users have met several times over the last year, including at the International Communications Association (ICA) meeting last May in New Orleans.

Problems frequently cited by users — and fodder for user group discussion — are lengthy delays in billing, billing errors and problems adding new services to custom deals. Although some users reported a good level of responsiveness from AT&T and questioned the need for a user group, others said they think a forum to air common concerns is vital.

Several users who requested anonymity said they have been stymied in their efforts to form a user group in part by AT&T's resistance to the idea. AT&T has refused to lend support and, in fact, some claim the carrier is trying to head off the formation of the group.

Although AT&T will not back the group, the carrier recently made gestures to assuage user concerns. AT&T has published a newsletter called VTNSinsights, a name coined from Virtual Terminal Network Service, the tariff designation for Tariff 12 deals.

In its inaugural issue in May, six of the top managers responsible for Tariff 12 services promised to use the newsletter to open a channel of communication with users. The newsletter will include interviews with company officials, regulatory updates, definitions of confusing tariff jargon and user-submitted articles.

The AT&T spokeswoman said the carrier believes that the newsletter will serve as a vehicle for two-way communication since users can contribute stories about their Tariff 12 experiences. When asked if the newsletter would run negative user stories, such as one about billing problems, the spokeswoman said "We will have to look at each [submission] on a case-by-case basis."

AT&T does raise the issue of billing problems in the newsletter in an interview with Andy Kemeny, director of VTNS billing and operations at AT&T.

"We admittedly have had some very difficult times as we have struggled to keep up with the demand [for Tariff 12 deals]," Kemeny said.

According to Kemeny, the key to improving billing is to boost the carrier's ability to perform predictably and manage the production load. He said AT&T had made changes to its quality control process system and has recently completed a threefold expansion of billing system capacity — both of which should help alleviate billing problems.

Despite these efforts, some users expressed concern that AT&T is just making a superficial attempt to appease users.

"This is a patronizing move by AT&T to placate users," said one Tariff 12 customer who requested anonymity. "We want AT&T to be customer-focused and really listen, not just use buzzwords." ◻

GUPTA's Quest accesses a variety of SQL data bases

By Timothy O'Brien
West Coast Bureau Chief

MENLO PARK, Calif. — GUPTA Technologies, Inc. announced this week an easy-to-use end-user data access, query and reporting tool that works as a front end to the major SQL data bases.

Based on Microsoft Corp.'s Windows 3.0 graphical interface, Quest combines extensive front-end data base capabilities with GUPTA's existing connectivity software, providing users with easy and secure access to corporate SQL data bases on mainframes, minicomputers or local-area networks.

"Quest takes care of everything without burdening the user with SQL issues," said Umang Gupta, president and chief executive officer of GUPTA. "Unlike many existing personal productivity tools, we don't ignore SQL, we just hide it from the user."

Using Quest on a personal computer running Windows, users with no knowledge of SQL can create, edit and browse SQL tables; issue simple to complex queries; and build reports by using the pointing and clicking mouse interface of Windows.

Quest will initially allow access to IBM's DB2 and OS/2 Extended Edition; Oracle Corp.'s data bases; Microsoft's SQL Server; Novell, Inc.'s NetWare SQL; and GUPTA's own SQLBase. Even though it is designed for use on a LAN, Quest can also function as a personal data base management system since each copy of Quest contains a single-user SQL data base. In addition, Quest includes interfaces to popular applications such as word processing and spreadsheets so that data can be presented and analyzed in various forms.

With this announcment, Gupta sees a major shift in his company's strategy from being a supplier of tools for developers to being a provider of end-user data base access tools. He anticipates this new business segment will fuel the company's growth and be the source of over 75% of the company's revenue within five years.

To date, GUPTA has supplied programming tools, SQL data base servers and SQL connectivity software for developers. Although SQLWindows, a fourth-generation language client/server development system, has been popular, GUPTA's strength lies in its ability to provide connectivity software to all major data bases.

William Higgs, vice-president of market research firm InfoCorp in Cupertino, Calif., believes information systems (IS) managers will view Quest as one more component needed in the move to LAN-based client/server computing. Even though there is not yet strong demand for front-end SQL tools, he maintains that corporate IS managers want to be assured that tools like Quest are available as they cautiously move ahead with their network and data base implementations.

"GUPTA is making virtue out of necessity — it's a good move," Higgs said, referring to the fact that GUPTA's own SQLBase is not widely used like some of the oth-

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DEC bolsters net control, document architectures

Firm promises software to manage EMA objects.

By Eric Smalley
Senior Editor

MAYNARD, Mass. — Included in the wave of products and services announced by Digital Equipment Corp. last week were extensions to DEC's Enterprise Management Architecture (EMA) and Compound Document Architecture (CDA).

DEC announced its intention to provide Common Agent software for managing objects such as systems, networks, data bases and applications under EMA. The Common Agent would eliminate the need to write separate agents for each element to be managed within the EMA framework, according to DEC officials.

Network Application Support (NAS), DEC's architecture for integrating user interfaces, applications, systems and networks, will become manageable EMA with the Common Agent.

The Common Agent comprises a Managed Object Module and a protocol engine. All objects supporting the Common Agent can be managed from the DEC Management Control Center (DECmcc) Director, or a Simple Network Management Protocol or Common Management Information Protocol management station.

The Common Agent will initially be available for the Open Software Foundation's OSF/1 Unix and VMS platforms.

Managing applications — setting parameters for how applications use system and network resources, and how applications

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

> "The super-server market is growing so fast that as a small company, we just can't exploit it fast enough on our own."
>
> **Larry Ingwersen**
> Co-chairman and founder
> Tricord Systems, Inc.
> Minneapolis

People & Positions

Pacific Bell announced that information technology consultant **Eric Firdman** has joined the company to head a new unit, Strategic Information Systems, organized under the Product and Technology Support Group.

In his new role, Firdman will examine information technology at Pacific Bell. He will also design artificial intelligence and expert systems for internal use.

Robert Keiper, formerly president of videoconferencing consulting firm Keiper Associates, has joined **Vyvx RSI, Inc.** as marketing and sales specialist for videoconferencing. Vyvx RSI provides design and management services for data and video applications.

Dallas-based **DSC Communications Corp.** recently announced that **Frank Perpiglia,** formerly senior vice-president of engineering at Compugraphic Corp., has been named vice-president of technology and product development. Perpiglia will be responsible for switching and product development.

Allen Fleener, president of Dallas-based **InterVoice, Inc.**, has announced his retirement. **David Brandenburg,** chief operating officer at InterVoice, will assume the additional responsibilities of president. InterVoice develops and sells voice response systems for outbound dialing, call directing and audiotex. ◼

Tricord takes partner to bolster marketing, R&D

Sells 5% stake to Kubota for $7m capital infusion.

By Bob Brown
Senior Editor

MINNEAPOLIS — Privately held Tricord Systems, Inc. last week said it has signed on a large Japanese partner in return for $7 million the superserver maker will use to bolster marketing and product development.

Tricord said the capital infusion will enable it to compete more effectively against the likes of IBM and Compaq Computer Corp., which often win superserver orders based on brand name alone.

The agreement also calls for the investor, Kubota Corp., to manufacture Tricord's line of PowerFrame superservers at a plant in Yamanashi, Japan, and for Tricord to sell its products in that market. This should help Tricord, which entered the superserver market in May 1990, gain a foothold in Japan's nascent network server market.

Kubota, an $8 billion conglomerate that entered the computer industry in 1986, has previously formed relationships with MIPS Computer Systems, Inc. and Stardent Computer, Inc., among others.

Kubota is providing Tricord with a multifaceted financial package that consists of a $3.4 million equity investment — which gives Kubota a 5.2% stake in Tricord — and a $3.5 million loan that can be repaid in either cash or stock.

Kubota joins a group of existing investors that have sunk about $25 million into Tricord, which is expected to become profitable in the second quarter of this year, the vendor said.

Tricord executives are hopeful that the company's partnership with Kubota will give the superserver firm the resources it needs to not only improve marketing, but to improve its products.

Larry Ingwersen, co-chairman and founder of Tricord, said PowerFrame superservers, which are based on Intel Corp. 80486 microprocessors, are more powerful than personal computer-based superservers because of their scalability and hardware architecture.

Ingwersen said Tricord's PowerFrame products offer a better price/performance ratio than minicomputers and mainframes positioned as servers.

PowerFrame products' support of major network operating systems, including Novell, Inc.'s NetWare, Microsoft Corp.'s LAN Manager and several versions of

(continued on page 10)

INDUSTRY BRIEFS

DEC to resell Retix software. Digital Equipment Corp. last week said it will resell Retix's OpenServer 400 Series of electronic messaging software for use in personal computers on local-area networks. DEC will offer users the Retix OpenServer 400 for DOS and its Messaging Handling System Gateway to X.400 software in conjunction with existing DEC X.400 electronic messaging software. The firms are working toward adding a variety of OpenServer gateway products to popular LAN-based electronic mail and office automation products.

Over the long run, DEC and Retix plan to integrate the directory and network management capabilities of their products. Retix offerings will be available from DEC this month. Pricing will be announced later.

AT&T unloads Sun stock. Citing its recent buyout of NCR Corp. and the resulting change in relationship between itself and Sun Microsystems, Inc., AT&T last week said it has sold most of its 19% stake in Sun. Sun bought back about five million of AT&T's 19.1 million shares of Sun stock at $36.25 per share. Another 11 million shares will be sold to institutional investors by Salomon Brothers, Inc. of New York. These transactions will result in a pretax gain of about $137 million to AT&T. The remaining shares will be sold at a later date to unspecified buyers.

Under an agreement reached in January 1988, the carrier gradually increased its stake in Sun to 19% during the past

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Status of local CCS7 access tariff filings

Ameritech	Initial tariffs rejected; no tariff filing pending.
Bell Atlantic Corp.	Tariff similar to BellSouth filing; approved May 14 by FCC.
BellSouth Corp.	Tariff approved Dec. 12, 1990. Summary: CCS7 access capability offered as optional signaling feature under switched access Feature Group D. No charge for out-of-band signaling service; CCS7 costs to be recovered through Feature Group D charges as general network upgrade.
Nynex Corp.	Tariff similar to BellSouth filing; awaiting FCC decision.
Pacific Telesis Group	Initial tariffs rejected; later this month plans to file on behalf of Pacific Bell a tariff similar to BellSouth filing.
Southwestern Bell Corp.	Tariff not filed yet; expects to file January 1992.
US West, Inc.	No tariff filed.
GTE Corp.	Filed revision to special access tariff June 7 to allow customer to designate a regional signal transfer point as a customer-designated location. Also offers nonchargeable option allowing access to line information data base service.

CCS7 = Common Channel Signaling System 7

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE*NETWORK WORLD*

RBHCs haggle over CCS7 tariff schemes

Carriers' disagreement imperils national availability of local-loop CCS7 services until issue is resolved.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — BellSouth Corp. has jumped to the forefront in getting Common Channel Signaling System 7 (CCS7) services tariffed by the Federal Communications Commission, but only three other RBHCs are following its lead.

Such a discrepancy among the regional Bell holding companies could indefinitely delay widespread availability of CCS7 services in the local loop, clouding interexchange carriers' vision of providing users with end-to-end network services that support a uniform set of applications.

Bell Atlantic Corp., Nynex Corp. and Pacific Telesis Group have indicated they will back BellSouth's tariff rate structure for speeding the availability of CCS7 services in the local loop.

But Ameritech, Southwestern Bell Corp. and US West Communications, Inc. have voiced opposition to BellSouth's tariff rate model, labeling it as unfair because it passes the cost of the service onto the general rate base, instead of just to users of the service.

The three carriers have vowed to lobby the FCC to adopt its own CCS7 tariff plan in place of BellSouth's proposal.

FCC rate policy unclear

CCS7 is an advanced method for out-of-band signaling. It requires the construction of a separate signaling network parallel to the public network bearing voice and data traffic.

Such a signaling network could well deliver on the promise of Integrated Services Digital Network, including faster call setup times, 800 number portability, data base querying and benefits such as toll-fraud reduction.

Many long-distance carriers have already upgraded their networks from multifrequency in-band signaling to CCS7 and want to interconnect them with local access CCS7 for nationwide delivery of ISDN services.

But the RBHCs have been slow to file CCS7 tariffs with the FCC, in part because the commission has not made it clear how it wants CCS7 rates to be structured ("CCS7 tariffs await judgment from FCC," *NW*, Nov. 5, 1990).

Consequently, the FCC only gave tacit approval to BellSouth's tariff proposal in December 1990 but did not set a policy that endorsed that rate structure, a move that leaves in question whether the BellSouth tariff will be upheld or need to be revised.

"It's still a live issue," said Colleen Boothby, deputy division chief for the Common Carrier Bureau of the FCC. "If someone wants to do [tariff CCS7 services] differently, they can still come to us."

The BellSouth tariff passes on the cost of CCS7 to the entire rate base as a general network upgrade charge appended to its Feature Group D class of services. It

(continued on page 10)

MCI, Picturetel to package video gear, net services

Under reseller deal, both agree to waive $3,000 fee.

By Bob Brown
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp. and PictureTel Corp. last week announced an agreement in which both companies will market MCI network services packaged with PictureTel videoconferencing equipment.

While users are unlikely to get a price break on a videoconferencing package from MCI or PictureTel, the vendors are running a 90-day promotion that waives the $3,000 videoconferencing equipment installation fee.

Under terms of the nonexclusive, one-year agreement, the two vendors' sales forces will offer users end-to-end videoconferencing systems and services. They will jointly market MCI's services, including Switched 56 and private-line services, as well as PictureTel's System 4000 videoconferencing system, which includes a monitor, camera and coder/decoder.

MCI demonstrated PictureTel's System 4000 products working with its own data communications services at the International Communications Association conference in Anaheim, Calif., last week.

"PictureTel's products and MCI's Switched 56 service are positioned to support the fastest growing market segment — working-level meetings using videoconferencing speeds of 384K bit/sec and below," said Kathleen Flaherty, MCI's vice-president of large accounts.

The joint marketing agreement will boost MCI's presence in a $500 million market that its rivals have been quicker to exploit, observers said.

"MCI has made a commitment to aggressively pursue the videoconferencing marketplace, which they have really not chosen to be a part of until just recently," said Robert Mitro, PictureTel's vice-president of sales and marketing.

PictureTel is gearing up to train 500 MCI salespeople about its videoconferencing equipment, and MCI plans to provide users with a single point of contact for videoconferencing support, he said.

Robert Rosenberg, president of Insight Research Corp., a Parsippany, N.J., market research company, predicted that MCI will go toe-to-toe with AT&T in the videoconferencing market, thanks to its partnership with PictureTel.

US Sprint Communications Co. holds the largest share of the videoconferencing services market, while AT&T is a close second, according to analysts. The two vendors operate videoconferencing centers, sell equipment and offer network services.

Both PictureTel, which reported revenue of $37 million last year, and its chief rival, Compression Labs, Inc., have been aggressive in forming reseller and joint marketing relationships with long-haul and local exchange carriers.

Industry Briefs

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three years. It also provided Sun with capital to fund its growth and AT&T with a partner with which to develop Unix software.

Given AT&T's and Sun's continued interest in Unix, there will be opportunities for the companies to work together in the future, according to executives from both firms.

SynOptics, Siemens ink OEM deal. SynOptics Communications, Inc. last week said Siemens AG's Telecommunication Cables division will sell the firm's wiring hubs under a new reseller agreement. The three-year contract is designed to bolster Siemens' local-area network product portfolio and provide SynOptics with a strong European sales outlet.

IBM joins object management group. IBM last week announced it has joined the Object Management Group, an international organization that promotes the use and standardization of object-oriented technology in software development. IBM's membership lends credibility to the group, which earlier this year added Microsoft Corp. to its membership list of more than 100 computer software vendors and users.

The Framingham, Mass.-based group promotes industry guidelines and standard interfaces for object-oriented technology. This standardization is designed to help programmers develop applications that can run independently across different computer systems and nets.

Lotus, Parallan join forces. Lotus Development Corp. and Parallan Computer, Inc. recently signed a two-year joint marketing and product development agreement. The deal calls for the companies to share sales leads and enhance the compatibility of the Parallan Server 290 and the Lotus Notes groupware application.

WilTel to resell Octel systems. WilTel Communications Systems, Inc., a subsidiary of WilTel, the Tulsa, Okla.-based long-haul carrier, recently agreed to distribute Octel Communications Corp.'s voice processing systems nationwide.

Under the three-year agreement, WilTel Communications Systems will market the Octel Voice Information Processing Server and other Octel products.

In a separate action, Octel last week announced the formation of VPS Europe, Ltd., its new European subsidiary in the U.K.

Beyond inks distribution agreements. Beyond, Inc., a Cambridge, Mass., electronic mail software start-up, last week said it signed distribution agreements with Merisel of El Segundo, Calif., and Ingram Micro of Santa Ana, Calif., to sell its networked applications.

The announcement coincides with Beyond's initial shipments of its "At" Mail Release 1.0 product for Lotus Development Corp.'s 1-2-3 and Symphony spreadsheet users. Merisel and Ingram will sell Beyond's "At" Mail as well as BeyondMail, which will be offered in the near future.

Mitel buys Telenova assets. Mitel, Inc., a private branch exchange maker, recently agreed to buy the assets of Telenova, Inc.'s distribution arm. Terms of the agreement, which must be approved by each company's board of directors, were not disclosed.

Anthony Crisalli, Mitel's senior vice-president of operations, said his company's decision to acquire Telenova Distribution Co.'s assets was a direct result of Telenova's recent Chapter 11 filing. He pointed out that the acquisition would be in the best interest of the company's clients because about 60% of Telenova Distribution's customers are also Mitel customers

Mitel does not plan any departure from its traditional independent dealer distribution network, he added.

US West, DDI to share cellular net. US West, Inc.'s Spectrum Enterprises division and DDI Corp. of Japan last week signed an agreement to share each other's cellular telephone networks.

Under the agreement, DDI customers traveling to the U.S. can borrow US West cellular telephones and vice versa. The telephones must be borrowed because the two companies' phones are incompatible.

US West and DDI will seek to expand such roaming services over time, a DDI spokesman said.

RBHCs haggle over CCS7

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does not levy a separate charge for use by long-distance carriers or large users to interconnect to CCS7 signal transfer points, which are packet switches that support the signaling network.

Ameritech objected to this cost-recovery method, citing it as unfair to those not using CCS7 services. "We determined that not all customers will want CCS7 capability," said Terry Appenzeller, Ameritech's senior director for Open Network Architecture (ONA) planning and development.

Ameritech maintains that CCS7 should have separate service charges because "you can turn it on and off," Appenzeller said. Ameritech instead favors a CCS7 tariff that would break out the service as a separate rate element, rather than lumping it into a generic class of services used by the entire user base. Charges would then be assessed only to CCS7 service users.

Ameritech said it floated this proposal as part of its ONA filing in December.

Later this week, the FCC is scheduled to examine ONA access charges during an open meeting. Ameritech is confident its views on CCS7 will be vindicated.

"If what [the FCC] is requiring is what Ameritech is doing, the other RBHCs will have to get in line," Appenzeller said.

But the hard-line stance taken by some of the RBHCs will likely translate into a further delay in CCS7 access availability. Other RBHCs, such as Pacific Telesis, have decided to compromise for the sake of expediency.

Frank Hopwood, federal regulatory director for the carrier, said Pacific Telesis will file a tariff in a few weeks on behalf of Pacific Bell, which will support the BellSouth model.

"It's a compromise," Hopwood said. "But we've got to get this stuff started and later worry about the rate structure we want."

Where the tariffs stand

Bell Atlantic, enthusiastically backing the BellSouth approach, received FCC approval for its own CCS7 tariff on May 15, becoming the second RBHC to begin providing access to its CCS7 network.

Nynex, with a BellSouth-type tariff pending at the FCC, hopes to be the third.

Bell Atlantic currently has 12 long-distance carriers waiting to be interconnected to its CCS7 net's signal transfer points, according to a spokesman. US West Communications so far is the only vendor that has not attempted any tariff filing to date, although Glenn Brown, executive policy director for the carrier, said it will eventually ask the FCC for a waiver to establish CCS7 as a separate rate element, the approach backed by Ameritech and Southwestern Bell.

But Don Evans, director of federal regulatory affairs for MCI Communications, Inc., pointed out that the growing differences among the RBHCs regarding CCS7 tariffing will make it impossible for long-distance carriers to deliver end-to-end service nationwide.

"Two classes of end users are created," Evans said. "The haves and have-nots."

Tricord to boost marketing, R&D

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Unix, give it an edge over proprietary superserver hardware systems, he said.

But Tricord's lack of name recognition has presented the biggest obstacle to winning new business, Ingwersen said.

That's where the financing from Kubota will come in handy, Ingwersen said. The funds will be used to expand its marketing efforts and to forge ahead with research and development on new products, including a line of superservers scheduled to be unveiled early next year.

The Kubota-Tricord partnership is part of Tricord's strategy "to turn ourselves into a blue-chip company," Ingwersen said. He said he is tired of Tricord losing accounts "just because IBM pushes the Big Blue name."

Ingwersen figures Tricord will post revenue of about $20 million this year, based on current order rates.

Figuring that demand will soar, Tricord has enlisted Kubota to begin manufacturing Tricord superservers on a contractual basis. The work would be done at the Yamanashi plant starting in July. Tricord's long-term plan is to split manufacturing here and in Japan to provide the company with redundant manufacturing capabilities and a domestic manufacturing source in two major markets.

John Dunkle, president of WorkGroup Technologies, Inc., a Hampton, N.H., consulting firm, said that efficiencies resulting from the new manufacturing capability should enable Tricord to lower its prices to better compete against Compaq and other vendors.

In a move related to the Kubota partnership, Tricord formed a Japanese subsidiary in May called Nihon Tricord Systems Kabushiki Kaisha to give Tricord a strong presence in the emerging Japanese superserver market.

Although superservers currently represent a small market in Japan, sales are expected to top $450 million by 1994, according to AZCA, a Redwood City, Calif., consulting firm.

TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

Rolm Co. last week reported that 50% of all new IBM 9751 CBX private branch exchanges are shipped with a PhoneMail voice mail system.

Carrier Watch

US Sprint Communications Co. last week announced that **Esso Petroleum Company, Ltd.,** the U.K. subsidiary of Exxon Corp., will use US Sprint's Global Virtual Private Network (GVPN) service to link operations in the U.K. with Exxon's U.S. offices.

GVPN will provide Esso with seven-digit dialing between its 17 U.K. offices and Exxon's more than 120 offices in the U.S.

US Sprint last week announced the contract at the International Communications Association's 44th Annual Conference and Exposition in Anaheim, Calif.

MCI Telecommunications Corp. last week announced a contract valued at approximately $50 million over five years to provide the Virginia Department of Corrections with collect calling service for inmates using pay phones at 47 institutions.

This and other recent pay phone contract awards are the result of a 1988 ruling by U.S. District Court Judge Harold Greene to open up the pay phone long-distance market. Prior to this decision, AT&T controlled all pay phone contracts.

MCI won a similar contract with the state of New York in April, a deal worth $34 million. The largest pay phone contract it has landed to date is a deal with the U.S. Navy for $375 million over five years.

According to Edward Murray, director of the Virginia Corrections Department, inmates will receive the same rates on their collect calls as they have in the past with AT&T.

Government set to issue RFP for int'l voice service

Also plans for new FTS 2000 data encryption.

By Ellen Messmer
Washington Correspondent

WASHINGTON — By year end, the federal government is expect to approve a new international voice service and, separately, a new Federal Telecommunications System (FTS) 2000 encryption service, according to an executive with the General Services Administration.

Michael Corrigan, the GSA telecommunications director for FTS 2000 and assistant commissioner for telecommunications services, said the government will issue a request for proposal during the next few weeks for international voice communications for both defense and civilian agencies.

The contract, which should be awarded by year end, is being handled by the Defense Commercial Communications Office of the Defense Communications Agency. Currently, international services are not provided under FTS 2000, and the procurement stands apart from the FTS 2000 long-distance procurement.

Corrigan, speaking before the Capitol Women and Men in Telecommunications trade group, said the current FTS 2000 vendors — AT&T and US Sprint Communications Co. — are free to bid on the contract, but he refused to offer further information until the RFP is released.

Separately, Corrigan said the GSA plans to offer a new data encryption service to FTS 2000 users late this fall under the GSA's Information Security Management Service. The service would involve the provision of some customer premises equipment and management of encryption keys. The cost is expected to run about $80 per month for encryption services between two computers, he said.

Corrigan emphasized that the GSA intends to stay out of any standards battles between the National Security Agency (NSA) and the National Institute of Standards and Technology (NIST) regarding encryption.

For more than a year, NIST has said it would release a new federally required public key encryption standard, but observers say that squabbles between the two groups on what is the best standard has held up a decision.

Last year, officials from NIST promised a public key encryption standard would be ready by May, but like earlier promises, that deadline was not met.

Lastly, Corrigan said the GSA wants to establish agreed upon technical parameters for video-

(continued on page 12)

WASHINGTON UPDATE

BY ELLEN MESSMER

The Communications Competitiveness and Infrastructure Modernization Act was introduced last week by Al Gore (D-Tenn.) and Conrad Burns (R-Minn.) in the Senate and Rick Boucher (D-Va.) and Mike Oxley (R-Ohio) in the House. The goal of the bill is to facilitate the development of a nationwide, broadband fiber-optic network for both residential and business customers by the year 2015.

"By 2015, the Japanese plan to have connected every business, home and institution by these fiber-optic networks," Gore said when introducing the bill. "If the United States fails to update current policy, we will be decades behind and the price we will pay in jobs, innovation, medical and other research will be enormous."

The four lawmakers have proposed allowing the the local exchange companies to provide cable television service in return for a comprehensive proposal from these carriers detailing their plans to deploy broadband communications systems.

The Federal Communications Commission would create the rules and regulations governing the broadband implementation plans, which would be submitted by the telephone companies to each state within one year of the legislation enaction.

Each state would then decide whether to approve the plans.

Voice processing industry consolidation

Companies	Year	Reason
Ameritech purchased Tigon Corp.	1989	Access new market
Centigram Communications Corp. acquired Speech Plus, Inc.	1990	Reduce product development cycle
Microlog Corp. acquired Genesis Electronics Corp.	1990	Add distribution
Dialogue Corp. closed its doors	1990	Not enough capital
Tigon purchased GTE TeleMessenger, Inc.	1991	Consolidate market position

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: HAMBRECHT & QUIST, INC., SAN FRANCISCO

Voice processing mart consolidating

Experts predict shakeout due to slow economy and large players spending big bucks on R&D.

By Bob Wallace
Senior Editor

The recent downturn in the U.S. economy, high research and development costs, and an overcrowded market are pushing the voice processing industry into what could be a major consolidation.

The market — comprising voice-messaging products and services, as well as voice response systems — has already witnessed a fair amount of consolidation with such buyouts as Tigon Corp.'s acquisition of GTE TeleMessenger, Inc. earlier this year and Microlog Corp.'s purchase of Genesis Electronics Corp. in late 1990 (see graphic, this page).

As bigger players, such as the private branch exchange vendors, devote more money to voice processing R&D, smaller companies are finding it increasingly difficult to keep pace. Some analysts are predicting that a shakeout will reduce the number of industry players from 200 to about a dozen.

"With the industry's growth rate coming down and with PBX vendors [spending more money] on voice processing, we're going to see a real market consolidation," said Steven Levy, a senior technology analyst with Hambrecht & Quist, Inc., a San Francisco investment bank. "The barriers [for] entry in the voice processing business are very low, but the barriers to [long-term] success are high."

PBX vendors are investing in voice processing systems in part to add value to their product lines. The three top PBX vendors are expected to account for more than one third of total market revenues by year end (see graphic, page 12).

"We've increased our [voice processing] budget by at least 10% a year for the last several years," said Carolyn Ring, AT&T's division manager of voice processing, call centers and PBX-to-host links. "Voice processing applications are so easily married to the PBX that it would have been foolish not to get into voice processing in a big way."

Switch vendors stress one-stop shopping, saying that it is easier for customers to purchase a voice mail system from a PBX vendor than to buy a separate system and have to deal with two companies.

A report by Vanguard Communications Corp., a consulting and research firm in Morris Plains, N.J., that specializes in voice processing, said PBX vendors accounted for 17% of the voice-messaging market revenues in 1987. That figure soared to 32% in 1989 and swelled to 42% last year.

According to analysts, another factor fueling industry consolidation is accelerated efforts to provide voice-messaging and voice response technology on the same platform. Today, voice mail and voice response systems are typically sold as separate units, usually on different computer platforms, making it difficult to integrate their features and functions.

"With few exceptions, voice processing companies typically specialize in one of the segments but not both," Levy said. "This trend alone has been responsible for many of the mergers that have take place so far." Centigram

(continued on page 12)

Voice-messaging equipment snapshot

Company	Percentage of market share		
	1989	1990	1991*
AT&T	13%	14%	16%
Boston Technology, Inc.	4	4	5
Centigram Communications Corp.	5	5	6
Digital Sound Corp.	6	4	3
Northern Telecom, Inc.	8	7	12
Octel Communications Corp.	22	22	22
Rolm Co.	9	9	10
VMX, Inc.	8	7	6
Others	28	23	22
Total	$635.4	$795.3	$931.6
Compound annual growth rate	49.6%	25.2%	17.1%

* 1991 figures are estimated

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: HAMBRECHT & QUIST, INC., SAN FRANCISCO

Voice processing mart consolidating

continued from page 11

Communictions Corp., for example, acquired Speech Plus, Inc. for access to the latter's voice response technology.

The critical need to expand distribution channels for increased sales has also helped spur consolidation. Here, PBX vendors have long held a key edge over third-party voice processing vendors.

"We already had channels of distribution set up for our PBXs," Ring said. "We also have the reputation and the positioning. If the user has your PBX and you're positioned well with them, they're also going to buy your voice mail [system]."

In order to compete with PBX vendors, smaller voice processing companies have taken steps to build nationwide distribution networks. Such was the case with Microlog, which acquired Genesis last winter. "We bought Genesis largely because of their strong distribution network," said a spokesman for the Germantown, Md.-based voice-messaging systems vendor.

Nervous users

The specter of a market bloodbath has users worried, though they said a shakeout could also have long-term benefits.

"We'd want to deal with companies that have sound products, strong service and are well-financed," said Stuart Greenberg, vice-president of strategic business systems with Fidelity Investments, a discount broker. "In as much as a market consolidation can [improve] that by giving us more viable options, I'm for it. But if a market consolidation ends up creating more confusion, I'd be concerned."

Users concurred. "I just sent out an RFP for a number of voice response systems," said Michael Vande Woude, vice-president of operations, systems/telecommunications for Merrill Lynch & Company, Inc. in Plainsboro, N.J. "But it will be difficult to predict which vendors would survive a serious market consolidation."

He added that a shakeout will prolong the equipment purchasing process.

Finding a remedy

One user suggested monitoring vendor financials closely and discussing them with other clients to identify trends in customer service and support before making any purchasing decisions.

"Users have to read the papers to see which vendors are posting gains or losses," said Maralyn Rosenblatt, a senior telecommunications systems specialist with Lockheed Corp., an aerospace firm in Calabasas, Calif. "I don't believe users are as savvy as they could be in this area."

"Telecommunications managers need to watch for the telltale signs that something is wrong with their vendor," Rosenblatt said. "They need to take notice of any staff reductions, office closings and general consolidations."

Lockheed uses voice mail systems from Octel Communications Corp., Rolm Co. and Centigram at various sites statewide. ◼

Gov't to issue RFP for int'l voice

continued from page 11

conferencing systems that would help ensure interoperability of videoconferencing systems.

Corrigan noted that the new CCITT Px64 coder/decoder (codec) standard is leading to interoperability among video codecs supporting link speeds ranging from 64K bit/sec to the European T-1 rate of 2.048M bit/sec.

Because video traffic and data are often sent over the same line, Corrigan said a working group has been set up to establish optimum speeds for multiple services.

Also, Corrigan predicted that expenditures by all agencies for FTS 2000 voice, data and video services would remain less than $1 billion this year. The FTS 2000 contract carries a $25 billion spending limit over 10 years. "We will have trouble spending over [the] $25 billion ceiling," he predicted. ◼

NETWORK WORLD PREFERRED OVER COMMUNICATIONS WEEK BY NEARLY 2 TO 1

NETWORK WORLD
The Newsweekly of User Networking Strategies
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DEC offers document mgmt. for DECnet
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NW's User Panel speaks out on ISDN
Top ISDN switches lack mutual compatibility

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DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

Amdahl Corp. of Sunnyvale, Calif., last week announced three new disaster recovery services: disaster recovery planning and implementation; evaluation of the effectiveness of an existing plan; and business impact analysis of a prolonged outage. Prices range from $25,000 to $200,000.

Data Packets

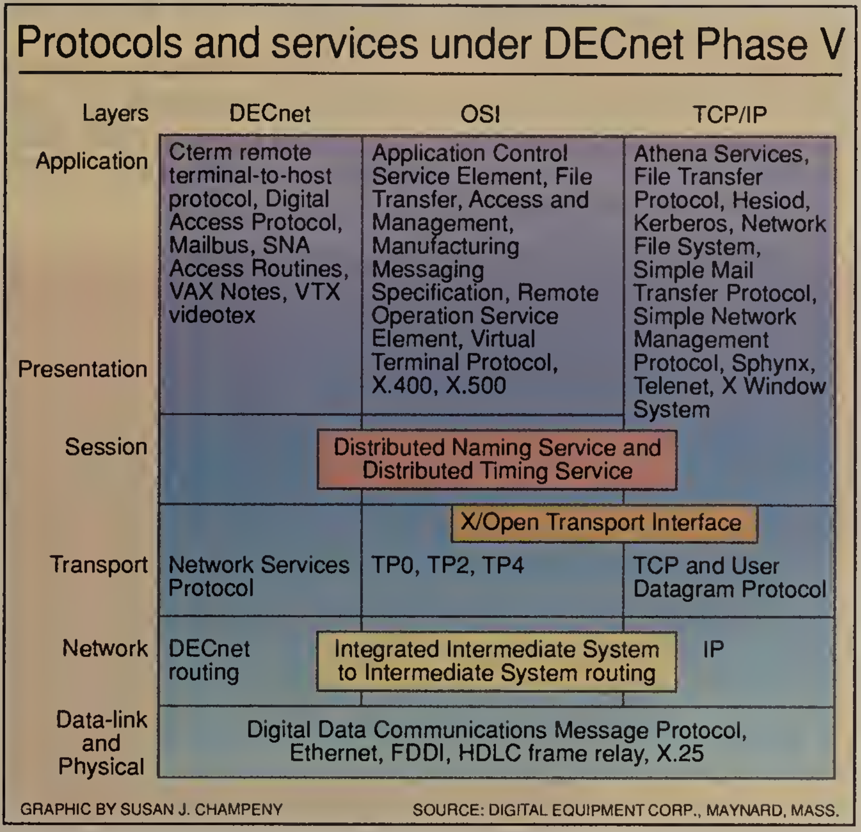
Data Switch Corp. of Shelton, Conn., last week announced support for IBM's Enterprise Systems Connection (ESCON) 10M byte/sec fiber-optic host channels on its Data Switch Model 2400 and 1800 matrix switches, as well as the Model 9088 and 9089 host networking systems, which are used to link mainframes to one another.

The two switching systems will enable IBM System/390 hosts that use ESCON to communicate with hosts and peripherals that use the older copper bus and tag channels. Existing switches can be upgraded to support ESCON for $14,000 per channel.

The **National Institute of Standards and Technology (NIST)** is sponsoring a seminar, "X.400 in the Federal Government," on June 17 at its headquarters in Gaithersburg, Md. At the seminar, which is for federal and private sector users, NIST and other agencies will present implementations of X.400 in the federal sector, including electronic data interchange, directory services, and X.400 naming and registration procedures. Admission is $75. For information, call Carol Lemnah at (301) 975-3622.

(continued on page 16)

Protocols and services under DECnet Phase V


Layers
DECnet
OSI
TCP/IP
Application
Presentation
Session
Transport
Network
Data-link and Physical
Cterm remote terminal-to-host protocol, Digital Access Protocol, Mailbus, SNA Access Routines, VAX Notes, VTX videotex
Application Control Service Element, File Transfer, Access and Management, Manufacturing Messaging Specification, Remote Operation Service Element, Virtual Terminal Protocol, X.400, X.500
Athena Services, File Transfer Protocol, Hesiod, Kerberos, Network File System, Simple Mail Transfer Protocol, Simple Network Management Protocol, Sphynx, Telenet, X Window System
Distributed Naming Service and Distributed Timing Service
X/Open Transport Interface
Network Services Protocol
TP0, TP2, TP4
TCP and User Datagram Protocol
DECnet routing
Integrated Intermediate System to Intermediate System routing
IP
Digital Data Communications Message Protocol, Ethernet, FDDI, HDLC frame relay, X.25

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: DIGITAL EQUIPMENT CORP., MAYNARD, MASS.

WANrouter line seen as key to DECnet Phase V nets

Router acts as interpreter for multiple protocols.

By Eric Smalley
Senior Editor

Users planning to build Digital Equipment Corp. DECnet Phase V networks are likely to find the vendor's new DEC WANrouter line of multiprotocol routers to be the fundamental building block.

Changes to the DECnet Phase V architecture quietly instituted last year place a greater burden on DEC's multiprotocol router for integrating the three protocol stacks supported under DECnet Phase V.

The DECnet Phase V architecture is multilingual, supporting DECnet Phase IV, Open Systems Interconnection and Transmission Control Protocol/Internet Protocol, according to Steve Kelley, a network consultant for DEC.

In the multilingual scheme, the router "acts in some sense as an interpreter," he said.

A change in direction

Under the vendor's original plan for DECnet Phase V/OSI, DECnet and OSI applications would access separate application- and session-layer protocols but would share OSI transport- and network-layer protocols via the Common Transport Interface.

Such a setup would have placed greater emphasis on DECnet network end nodes to handle the protocol integration.

But DEC officials decided to abandon the Common Transport Interface after determining it did not offer any clear benefit to users, according to Audrey Augun, DEC's open networks marketing manager.

The revised architecture calls for DECnet, OSI and TCP/IP applications to access distinct protocol stacks with DEC's Distributed Naming Service and the Integrated Intermediate System to Intermediate System (IS-IS) routing protocol providing links between the stacks (see graphic, this page).

That setup places a greater emphasis on the multiprotocol routers to handle protocol integration.

> The Distributed Naming Service informs a user which protocol is required to communicate with a user on another node.

▲▲▲

The Distributed Naming Service informs a user or application which protocol is required to communicate with a user or application on another node. The Integrated IS-IS protocol allows OSI, TCP/IP and DECnet packets to be routed concurrently in one network.

The removal of the Common Transport Interface also made it easier for DEC to integrate TCP/IP into the DECnet Phase V protocol stack. ◘

Retailer tries to lure firms onto E-mail net

Nordstrom appeals to 27,000 suppliers to use its electronic mail network for conversing with buyers.

By Bob Brown
Senior Editor

SEATTLE — Nordstrom, Inc., a fast-growing fashion specialty retailer based here, last week sent letters to its 27,000 suppliers encouraging them to communicate with the retailer via electronic mail.

Under a program dubbed Vendor Information Partnership (VIP) Express, Nordstrom will open up its internal mainframe-based E-mail system by letting merchandise suppliers communicate with Nordstrom buyers via MCI Communication Corp.'s MCI Mail service.

Suppliers will be able to use the program to more easily communicate shipping information for purchase orders and check the payment status of invoices by sending inquiries to Nordstrom's mainframe via MCI Mail.

While the E-mail setup will not initially support transmission of electronic data interchange files, Nordstrom is beginning to plan for that eventuality.

Company executives hope the program will smooth Nordstrom's inventory-ordering cycle and improve customer service by facilitating communications between the retailer and its suppliers. Also, E-mail is considered an improvement over phone calls, which can be expensive and result in endless rounds of phone tag, and faxes, which result in paper clutter.

"We're not trying to replace voice mail, the telephone or faxes with E-mail," said Patrick Adkisson, VIP Express project manager at Nordstrom, which has 64 stores in eight states. "We're just giving our people and partners another tool to use to enhance communication between them and to improve customer service."

Given the decentralized nature of the Nordstrom organization, a supplier might need to contact a dozen buyers from dif-

(continued on page 16)

Canadian agency looks to packet net to reduce costs

By Barton Crockett
Senior Editor

ANAHEIM, Calif. — BT North America, Inc. last week said Canada's Employment and Immigration Commission (CEIC) is using its packet-switching equipment in a major new private network spanning the country.

The packet-switched net, dubbed CEINET, is expected to reduce network costs by about a third, increase system reliability and enable microcomputers and terminals at remote sites to access data in any of five major data centers across Canada.

CEIC's new CEINET will consist of a 56K bit/sec backbone net with 19.2K and 9.6K bit/sec tail circuits spanning out to approximately 10,000 personal computers and terminals in the agency's offices across Canada.

CEIC will use BT North America packet switches to route data between remote offices and the five data centers. BT North America announced the contract at the International Communications Association conference here last week.

BT North America said CEIC will be the first user of the vendor's new low-end packet switches — the Turbo and PXL Engines — as well as one of the first to use its Concert Data Manager packet switch network management system.

According to Steve Connolly, director general of CEIC's information systems branch in Hull, Ontario, the agency will begin installing CEINET in the fall and expects to complete the job in approximately two years.

Access to all data centers

CEINET will replace five separate networks based on star topologies that link remote terminals and microcomputers to the five data centers. But that setup lets remote terminals access only the data center hub they are linked to and not other data centers across the department.

According to Connolly, CEIC employees will use the net for electronic mail, as well as to access unemployment payment and immigration tracking applications. ◘

Data Packets

continued from page 15

BrainTree Technology, Inc. last week announced DECS, a file compression and transfer facility for use over Digital Equipment Corp. VAX-based wide-area networks.

Steve Lilly, president of BrainTree Technology, said DECS offers file compression ratios of between 3-to-1 and 5-to-1, depending on the CPU. Because it compresses data, the offering supports file transfers at rates three to 10 times faster than DEC's own VMS COPY file-transfer facility, Lilly said.

DECS supports both batch and interactive data traffic and includes a recovery scheme that enables a file transfer to continue from the point where it was interrupted. That feature, plus the data compression techniques, cuts time- and usage-sensitive dial-up and public data network line costs. DECS also enables private-line users to increase the performance of their wide-area circuits.

Available now, DECS is priced from $1,000 for a MicroVAX II to $5,000 for a VAX 9000. Remote server versions, which can receive only files, are available at lower prices than the two-way versions.

For more information, contact BrainTree Technology at 600 Cordwainer Drive, Norwell, Mass. 02061, or call (617) 982-0200. ◻

Retailer tries to lure firms

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ferent Nordstrom sites regarding orders for a certain product, Adkisson said. That vendor would be better served broadcasting an E-mail message to those buyers, who could be located in different parts of the country, rather than trying to reach them individually by phone.

In his letter to suppliers, Adkisson stated that the program will save their business valuable time and money regardless of their company's size. Nordstrom is informing its large and small suppliers in the letter and accompanying brochure that MCI has agreed to extend to Nordstrom suppliers the same discounts it gives to the retailer.

Last month, Nordstrom completed a successful pilot test of the VIP Express program that began in January and involved about 40 suppliers.

Among the more popular VIP Express features was an invoice inquiry application. Using a customized version of MCI Mail's Lotus Express personal computer package (the development and marketing rights for which MCI acquired from Lotus Development Corp.), suppliers can query a Nordstrom mainframe about the status of invoice payments and receive a reply within minutes.

Applications such as those will enable Nordstrom to extend the usefulness of its Computer Associates International, Inc. E-mail system, which runs on an IBM 3090-600, Adkisson said. The mainframe-based system boasts more than 3,000 active mailboxes that generated about 3.5 million messages last year.

Adkisson hopes that about 2,000 Nordstrom suppliers will accept the offer to participate in VIP Express following this week's mailing.

Not an order

However, Nordstrom is not mandating that its buyers or suppliers sign up for the VIP Express program, Adkisson said. In fact, some buyers have already expressed concern about opening the door to "an onslaught of vendor messages and junk E-mail," he said.

"We've read that a lot of retailers are forcing suppliers into EDI," said Adkisson, "but we're not doing that."

Adkisson even differentiates between electronic data interchange and the VIP Express program. Whereas EDI involves computer-to-computer communications, Nordstrom's program involves a user making requests via a personal computer or terminal to another computer.

Currently, Nordstrom is not using EDI, but the company is plotting its EDI strategy, he said. ◻

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LOCAL NETWORKING

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Worth Noting

"People with smaller networks are spending more than people with bigger networks. People with bigger networks are adding applications as opposed to building the infrastructure."

Thomas Erickson
Analyst
Wessels, Arnold & Henderson
A Minneapolis-based
investment banking firm

Netnotes

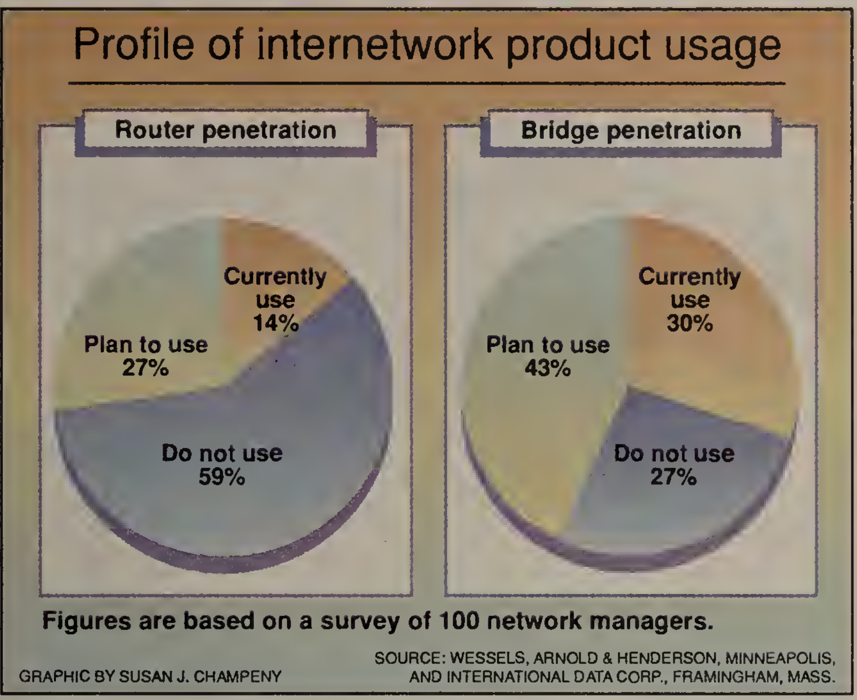
Ungermann-Bass, Inc. upgraded its NetDirector net management station with the addition of a topological network map and support of the Simple Network Management Protocol (SNMP).

NetDirector is a microcomputer-based package designed to manage Ungermann-Bass Access/One Ethernets that includes an SQL data base. Users can configure the topological map to group objects — anything from a local-area network segment to a server to a node — as desired and define map views and color coding. The SNMP support includes support for the Management Information Base II.

The upgrade to NetDirector is available now and costs between $3,750 and $8,000 depending on configuration. Customers who have support contracts receive the upgrade free of charge. NetDirector, with the upgrade, is priced between $7,500 and $16,000.

Newport Systems Solutions, Inc. has introduced an interface that allows remote microcomputer users to access a Novell, Inc. NetWare Access Server over an X.25 network. The new X.25 Communications Interface (XCI) resides on the NetWare server. Remote users connect to the NetWare Access Server and execute applications on the server, with only keyboard input and screen updates transmitted over the X.25 network.

(continued on page 20)



Figures are based on a survey of 100 network managers.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: WESSELS, ARNOLD & HENDERSON, MINNEAPOLIS, AND INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

Survey says few sites with large local nets use routers

Installed base is expected to triple within a year.

By Eric Smalley
Senior Editor

Only 14% of network administrators responding to a survey last month said they use routers, despite the fact they have relatively large networks.

The survey, which was conducted by Wessels, Arnold & Henderson (WAH), a Minneapolis-based investment banking firm, in conjunction with International Data Corp. (IDC), a research firm in Framingham, Mass., found that although router use is relatively limited today, the installed base is expected to triple over the next 12 months.

> Respondents ranked TCP/IP as the most important protocol for routers to support.
>
> ▲▲▲

The low level of acceptance of routers indicates that the technology is still not well understood by users, according to Thomas Erickson, an analyst at WAH. The results also indicate that the need for routers is not universal, he said.

But according to other researchers, the router numbers may not be a good indication of the market at large.

According to Janet Hyland, an analyst with market research firm Forrester Research, Inc. in Cambridge, Mass., a recently completed Forrester report showed that one-third of Fortune 1,000 sites use routers. Hyland admitted, however, that the firm had more trouble finding router users than it had anticipated.

The Forrester report did not, however, take into account users in the government or education sectors where router use is considerably higher than in the commercial sectors, she noted.

Respondents to the WAH/IDC survey ranked Transmission Control Protocol/Internet Protocol as the most important protocol for routers to support, followed in order by Novell Corp.'s Internetwork Packet Exchange (IPX), Apple Computer, Inc.'s AppleTalk, Digital Equipment Corp.'s DECnet, and Open Systems Interconnection protocols.

T-1 was ranked as the most important wide-area connection supported by routers, according to the survey, followed in order by X.25, 45M bit/sec T-3 facilities and Switched Multimegabit Data Services. Performance outweighed support and price in importance for routers.

The WAH/IDC survey found bridges, both local and remote, have a higher level of penetration in the networking market. Thirty percent of the survey respondents currently use them and another 43% plan to use them in the next 12 months.

The survey results show that, though bridge technology and the bridge market are fairly mature, there is still room for the bridge market to expand. Users generally configure networks in a hierarchical structure with bridges used to segment networks and routers used to link networks. This scheme calls for more bridges than routers, though as users build organizationwide nets the demand for both types of devices will grow. ◪

Users: Issues impede client/server nets

NW User Advisory Panel says a lack of open net products, management controls slow acceptance.

By Maureen Molloy
Staff Writer

Members of the *Network World* User Advisory Panel say client/server computing has made tremendous strides since the advent of local-area networks, but most cautioned that several issues need to be resolved before users can take full advantage of the technology.

The panel pointed to a dearth of sufficient products for open client/server environments and of adequate net management tools as factors impeding acceptance of the technology. Others claim the industry's definition of the concept is lacking, leading to different expectations on the part of users and vendors.

The User Advisory Panel is comprised of representatives of leading user groups as well as top networking executives from companies in a wide range of industries.

Client/server, when viewed as a peer-to-peer relationship between two systems, is a giant leap toward the ultimate goal of true distributed computing, according to Laurie Bride, manager of network architecture at Boeing Computer Services Co. of Seattle. The problem, she said, is that the architecture is poorly understood by most vendors.

Products fall short

"Many vendors seem to view client/server as a scaled-down version of the old time-sharing systems where most of the intelligence resides on the server, and the workstation acts as a relatively dumb terminal," Bride said. "As a result, most of the current products fall far short of users' needs."

Client/server environments could be implemented faster and more smoothly, Bride explained, if vendors better understood the parallels between client/server and distributed processing.

"A true client/server architecture consists of a logical and flexible relationship between two de-

(continued on page 20)

Shiva Ethernet-to-LocalTalk gateway version to debut

By Caryn Gillooly
Senior Editor

REDWOOD CITY, Calif. — Shiva Corp. recently announced FastPath 5, the newest version of the company's Ethernet-to-Apple Computer, Inc. LocalTalk gateway.

FastPath 5 — the first revision Shiva has made since it bought the product from Novell, Inc. a year ago — provides better network management, faster processing and easier cabling reconfiguration.

One of the primary enhancements of FastPath 5 is the addition of the new Shiva Net Manager software, which replaces the FastPath Manager software that came bundled with FastPath 4.

According to Elizabeth McGee, FastPath product manager at Shiva, FastPath Manager was basically a configuration tool for the gateway.

Although Shiva Net Manager is a configuration tool for AppleTalk Phase I and Phase II networks, it also includes a Simple Network Management Protocol (SNMP) agent so the gateway can be managed by an SNMP management station and display routing tables, giving the user a quick view of the network's current status.

"It's not a [Network General Corp.] Sniffer [network analyzer], but this lets administrators know at least something about what's going on with their networks," McGee said.

Shiva Net Manager supports SNMP Gets and Sets, which lets the user not only get SNMP information from the FastPath 5, but also set configuration information through SNMP.

Messages in English

In addition, Shiva Net Manager displays error messages in English, as opposed to a series of numbers.

"With FastPath Manager, administrators were getting error

(continued on page 20)

Think about your own LAN for a moment. A complex mix of clients and servers. Hosts and terminals. Bridges and routers. Ethernet and Token Ring.

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Seminar zeros in on key LAN management issues

SNMP may be king today, but CMIP on horizon.

By Caryn Gillooly
Senior Editor

MINNEAPOLIS — Architecture Technology Corp. recently held a series of seminars on local-area network management in which company President Kenneth Thurber discussed LAN management standards and practices.

He began by stressing the rapid growth of LANs, not only in the number of new installations, but also in the increasing size of existing LANs. In a study of 200 large corporations done by Network General Corp., 92% of the respondents said their LANs are growing at more than 25% per year, according to Thurber. Over 77% of the LANs support more than 200 devices.

Regarding net management, Thurber echoed today's users who contend that the Simple Network Management Protocol (SNMP) is the protocol of choice. But the future, he said, will look different.

The future is CMIP

"In the short term, the answer is SNMP. But in the long term, it will be the Common Management Information Protocol," Thurber said. "Ultimately, OSI CMIP will be a chip you buy for 25 cents or get for free without even knowing you've got it."

Thurber went on to discuss different vendors' management platforms and strategies, as well as a variety of tools that can be used for different levels of management, from the physical layer to application management. Throughout his talk, Thurber stressed that one of the most important parts of LAN management is knowing your network.

"One of the first questions we have to ask ourselves is, 'How do we know if the network is working properly to begin with?,' " he asked. "You have to know exactly what is on your system. Know everything about it. This will help [you] manage it."

One of the first steps in LAN management is creating a baseline — running the network with an average amount of traffic and recording how it performs. This, Thurber said, will establish a record that net performance can be gauged against.

From this record, the administrator can tell if there is a network slowdown and work to bring performance back to where it was, or they can test alternate configurations to see if performance can be increased.

It is still difficult to determine, Thurber admitted, if the network is running as it should be, but he said he expects a slew of new products that will enable users to perform network benchmarking.

"Expect to see companies coming out with network performance checks to determine if your network is running up to par," Thurber predicted.

Netnotes

continued from page 17

XCI consists of Newport's Wide Area Network Coprocessor and software, and supports two duplex lines at speeds up to 64K bit/sec. XCI is priced at $1,895 until Aug. 15, when the price will increase to $2,195.

NetManage, Inc. of Cupertino, Calif., has released Version 2.0 of its Transmission Control Protocol/Internet Protocol package for Microsoft Corp. Windows 3.0. and changed the name of the package from Newt to Chameleon. The product allows users to access multiple concurrent TCP/IP sessions on multiple hosts from a Windows-based microcomputer.

Version 2.0 adds support for Serial Line IP, IP routing, File Transfer Protocol, Simple Mail Transfer Protocol and Bind. NetManage has also boosted the performance of the package and increased the number of concurrent sessions.

Chameleon is implemented as a Windows Dynamic Link Library and is currently available for $400.

TCE Technology Group of San Jose, Calif., has introduced a network monitoring package for Banyan Systems, Inc. VINES networks called BanScan. The package continuously collects server statistics, provides trend analysis of resource utilization and allows network managers to set alarms.

BanScan is integrated with Banyan's StreetTalk distributed naming services. Each license, monitoring as many as 100 servers, costs $4,995.

FEL Computing, a division of FEL Industries, Inc., has announced that IBM will resell FEL's LANlink-DECnet software package. LANlink-DECnet connects IBM Personal Computers and compatibles on IBM, Novell, Inc. and Banyan Systems, Inc. networks to Digital Equipment Corp. networks using DEC's Local Area Transport protocol. LANlink-DECnet supports Ethernet and token-ring networks.

LANlink-DECnet is available through IBM's Delivery Network Systems of the Services Sector Division based in Charlotte, N.C.

LANlink-DECnet, which resides on the server, is priced by the number of concurrent users. A five-user license costs $1,495.

FEL Computing is based in Williamstown, Vt.

Network Application Technology (NAT) of Campbell, Calif., announced it is adding Simple Network Management Protocol (SNMP) management capabilities to its NMS/100 network management system. The Microsoft Corp. Windows 3.0-based software monitors Ethernet segments.

NMS/100 will be able to manage NAT's Ethernet segment manager and bridges using SNMP by the end of this month. The system will manage products from other vendors using SNMP by the end of October. The upgrade is free of charge until Oct. 31.

Beyond, Inc. last week announced that it has signed agreements with Merisel and Ingram Micro to distribute Beyond's electronic messaging software packages. The two retail firms will offer Beyond's @Mail product, which is currently available, and the soon to be released BeyondMail product.

@Mail operates with the Lotus Development Corp. 1-2-3 and Symphony spreadsheets, allowing users to send messages from within their spreadsheet applications. @Mail is based on the Novell, Inc. Message Handling System. BeyondMail is a rules-based electronic messaging package that serves as a front end to disparate messaging systems, allowing users to organize mailboxes, as well as filter and prioritize incoming messages.

Users: Issues impede nets

continued from page 17

vices whose roles can be interchanged," Bride said. "The benefits would allow information to be brought closer to the user and provide quicker responses than what is possible in a mainframe-based environment."

According to Michael Kaminski, manager of computer-integrated manufacturing/networking technologies at General Motors Corp., "There aren't enough products now, but they are slowly emerging. A bigger problem is that most vendors are doing their own thing instead of coming up with standards.

"A client/server architecture must be an open network that allows for portable hardware and software," Kaminski added. "That isn't happening, and instead, what is coming out is largely proprietary."

Despite the headaches involved, Kaminski said GM is plunging headfirst into client/server computing.

"If a user wants open systems and a distributed environment, where information is put into the hands of those end users that really need it, then client/server is the right direction," he said. "It's more expensive to implement client/server initially, but over the long haul, it will bring greatly expanded functionality."

Hughes joins fray

Hughes Aircraft Co. is slowly migrating to a client/server environment, according to Bud Huber, the company's senior consultant.

"Many companies are seeing that client/server systems can meet their business needs for decentralized, flexible information systems," said Huber, who also chairs the User Alliance for Open Systems. "The problem is that many vendors don't support client/server applications."

Besides insufficient products, the panel said tackling the problem of managing client/server environments is another key issue. All agreed that there is a need for more sophisticated network management tools.

"Client/server dictates that local-area network management, which may have been implemented in an ad hoc fashion previously, must take on more structure and sophistication," said Len Evenchik, director of communications for the Commonwealth of Massachusetts.

Huber said network management becomes increasingly complex as users migrate to client/server architectures.

"Highly reliable and robust network management capabilities are a must in client/server computing because as the environment becomes more modular, it also becomes much more difficult to manage," he said.

The panel pointed to an absence of a reliable network infrastructure to support adequate data administration.

"The current network support isn't reliable enough to take care of the data integrity and [capability to be scaled] required in client/server environments," Bride said. "Some are adequate for a small LAN in a single location, but few can handle a work group that's geographically dispersed over a wide-area network."

Shiva gateway version to debut

continued from page 17

messages, but they couldn't understand them," she said. "They were displayed in hexadecimal."

On the hardware side, two new features contribute to the increased speed of FastPath 5: a faster main CPU and a built-in LocalTalk I/O processor.

The earlier version of the product had an 8-MHz CPU that was responsible for processing LocalTalk traffic and performing all protocol translations, creating a bottleneck at the gateway. The new gateway is based on a 10-MHz CPU and comes with a separate LocalTalk I/O processor.

> "Basically, Shiva has assured their users they have not been cast adrift on an iceberg."

▲▲▲

FastPath 5 also includes an EtherModule, an exchangeable internal Ethernet transceiver that is available for thin, thick and 10BaseT Ethernet. If users need to switch from one type of media to another they can simply swap the transceiver module instead of replacing the gateway.

According to David Wasley, associate director for data communication and network services at the University of California, Berkeley, the new features address the limitations he had found with the university's 65 FastPath 4 units. "The performance improvement is very important — FastPath is a bottleneck for some applications," he said.

Wasley explained the gateway was a bottleneck for high-performance Apple Macintoshes transferring large files on a LocalTalk network.

Wasley said he is also looking forward to getting Shiva Net Manager. "The central management capability is essential," he said. "We have more than 65 FastPaths in a large network — the ability to manage them centrally will be a tremendous savings in manpower and time."

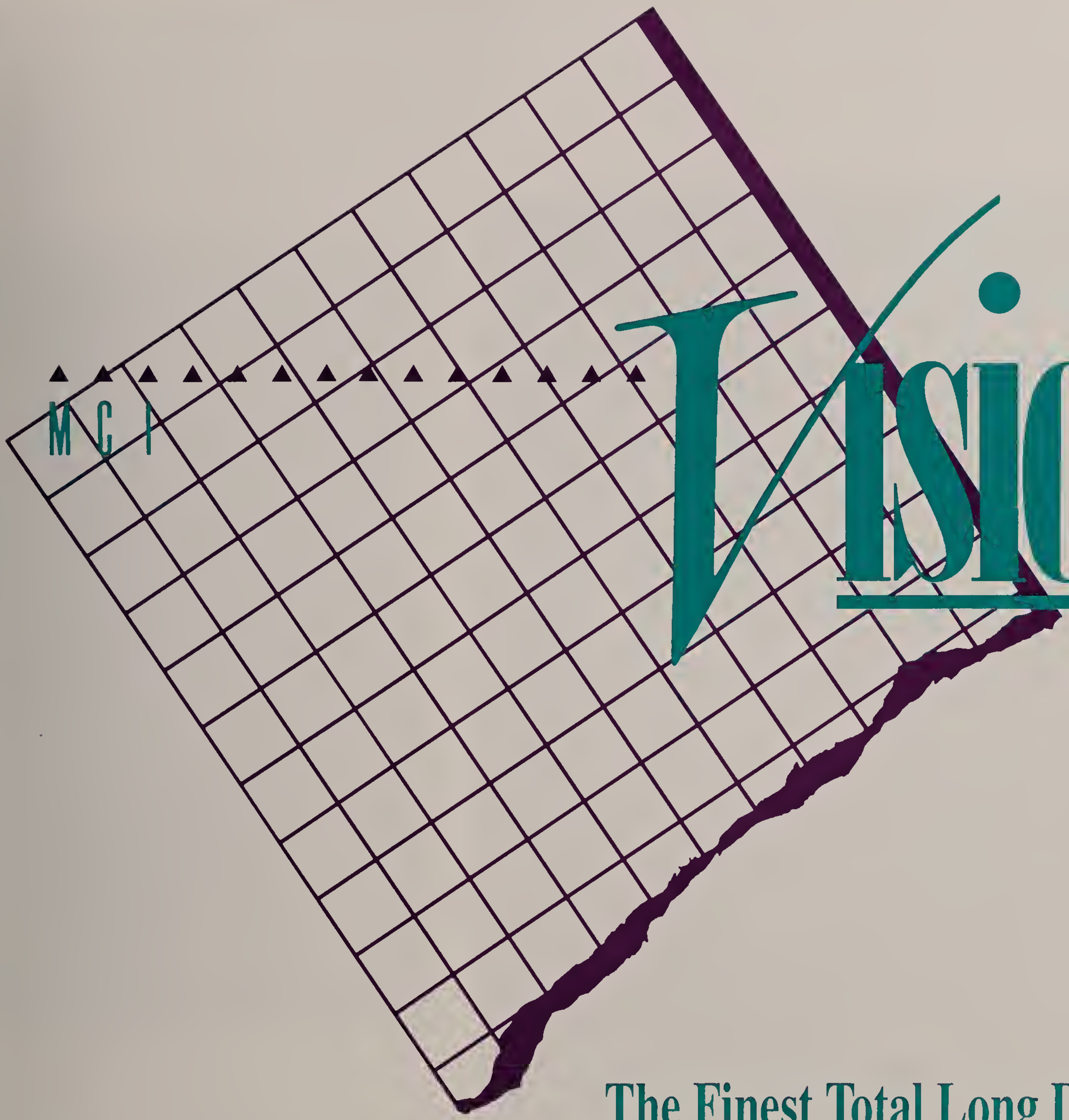
Quelled skepticism

According to both users and analysts, when Shiva bought the technology from Novell there was concern it would not be as diligent in keeping up with product development and enhancements. But with this release Shiva has shown its commitment to the product and its customers.

"Basically, Shiva has assured their users that they have not been cast adrift on an iceberg," said Peter Francis, an analyst at Dataquest, Inc., in San Jose, Calif.

Wasley agreed. "There was concern that Shiva wouldn't develop [the product] as well [as Novell], but this release shows us that Shiva is quite actively pursuing development," he said.

FastPath 5 will be available at the end of this month and is priced at $2,799. The Shiva Net Manager and either the 10BaseT EtherModule or the thin and thick Ethernet EtherModules are included.



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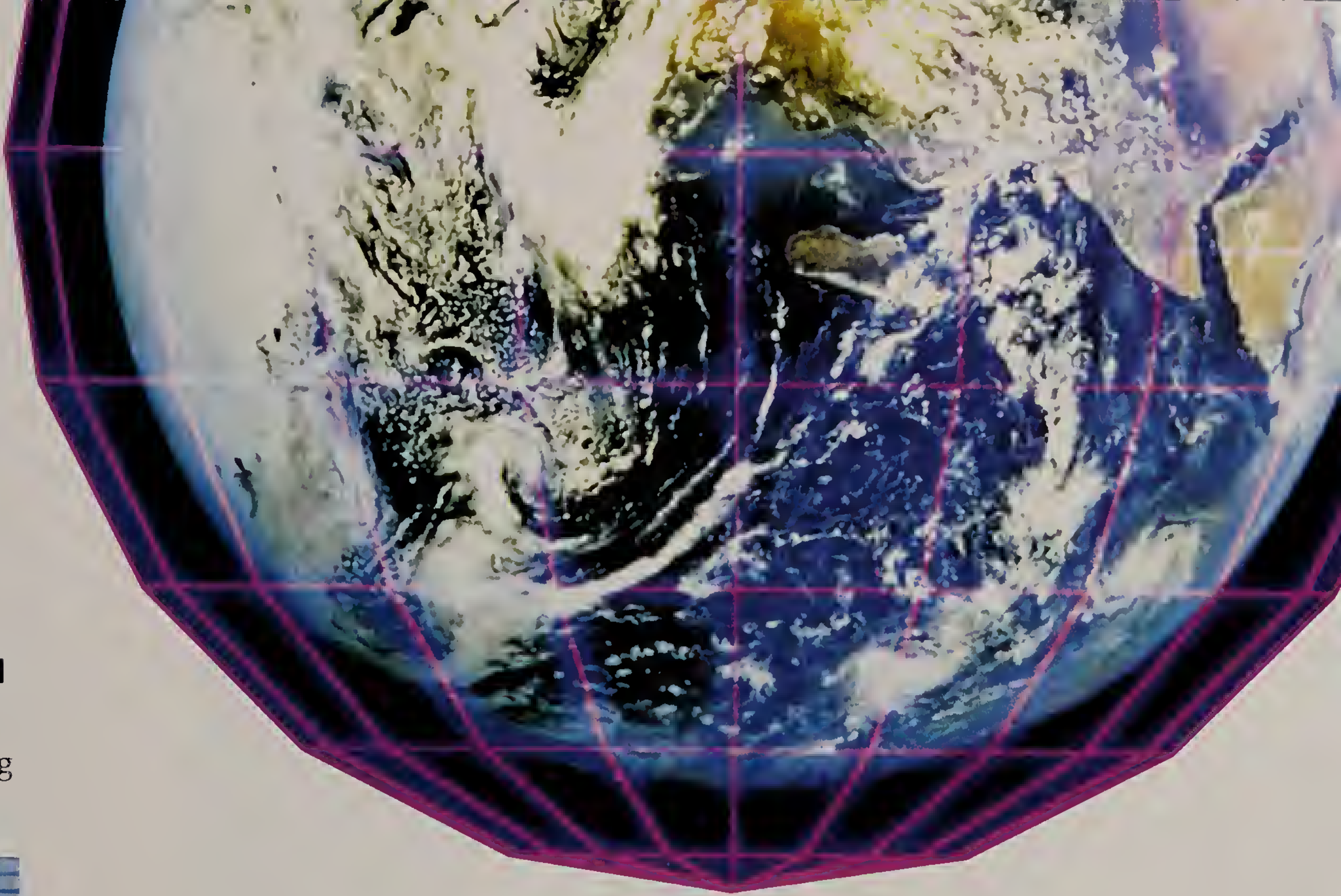

Discover flexible billing and management reporting.

For the first time, MCI Vision billing fits your corporate culture, too.

Now, whether your company is accustomed to paying all bills at one location or letting each location get its own, MCI Vision billing and reporting are flexible to fit your requirements.

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Your MCI team makes it easy for you to convert and live with Vision!

Today, your MCI team, made up of your Account Executive and your own MCI Vision Service Representative, can show you how to quickly take advantage of MCI Vision.

Your Service Representative is available every day, ready to add, change and make modifications to MCI Vision for every location, every employee, every traveler and every phone. Your Service Representative makes MCI Vision the most responsive telecommunications service available anywhere.

Your accounting and accounts payable department will see MCI Vision as a salvation.

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Your data department will like MCI Vision too.

Now MCI Vision adds Switched 56Kbps capability to its data handling services. With MCI Vision you can transmit at 1200, 2400, 4800, 9600 bps or 19.2Kbps. For special data applications, you can add Switched 56Kbps services as your company grows.

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Monthly Spending on AT&T Service	Same Calls on MCI Vision
$ 1,592.82[1]	$ 1,442.63
4,965.23[1]	4,525.00
13,894.74[2]	12,935.37
30,278.74[3]	28,362.75
50,894.82[3]	45,873.06

[1] AT&T PRO WATS service

[2] 50% PRO WATS, 50% MEGACOM service

2. **Stop Unauthorized Calls!**

If your company controlled unauthorized calls, the savings coul be dramatic. MCI Vision has the controls to help you.

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$ 1,500 (15 employees)	5 calls at $1.00 each
5,000 (50 employees)	10 calls at $1.00 each
15,000 (100 employees)	20 calls at $1.00 each
30,000 (250 employees)	70 calls at $1.00 each
50,000 (400 employees)	90 calls at $1.00 each

* Examples are estimates based on an average call length of 4.8 minutes at daytime rates.

Monthly Savings	Annual Savings	Savings
$ 150.19	$ 1,802.28	9.4%
440.23	5,282.76	8.9%
959.37	11,512.44	6.9%
1,915.99	22,991.88	6.3%
5,021.76	60,261.12	9.9%

[3] 25% PRO WATS, 75% MEGACOM service

Total Savings Monthly	Savings Monthly
$ 100	6.3%
200	4.0%
400	2.6%
1,400	4.6%
1,800	3.6%

3. Your entire long distance bill for October, 1991 is FREE if you convert to MCI Vision for one year by July 31, 1991.

Clearly, no other company offers businesses like yours the kind of service MCI Vision promises. And now, if you use MCI Vision for one year...we will give you every call you make in October, 1991, free of charge. That's every domestic and international call from the office and from the road, free...up to $100,000 in free calls!

Here's how it works. We'll look at your September, 1991 bill and, even if you spend as much as $33,333 in September, 1991...*we'll let you spend as much as triple in October, 1991 and still give you every call free!* Couldn't your business use a month of free calls in these difficult economic times?

Want to know why we will give you up to triple your September bill free?

We thought you might want to do a long distance phone blitz to all of your important customers to solidify your relationship, to sell more, to announce a new promotion or new product, to even build a prospect database...in other words, we're suggesting you could increase your sales and improve your service by using MCI Vision as a profit center, free in October! Isn't that a great opportunity for you this year?

Now let's total up the potential MCI Vision savings.

Switching to MCI Vision could be like getting 2 months of long distance free between July 31, 1991, and July 31, 1992.

Here's our logic.

1. MCI Vision rates shown in the example save over AT&T from **6.3% to 9.9%**

2. Controlling unauthorized calls could save (conservatively)....**0% to 6.3%**

3. One month free MCI Vision Service in October...............**8.3% to 8.3%**

Added together ....14.6% to 24.5%

Two months free is 16.6%...the potential savings from converting to MCI Vision could be even greater.

Simply put, you'll find that MCI Vision costs less!

- Every domestic call on MCI Vision is charged in six second increments. AT&T PRO WATS has 30 second minimums on domestic calls...so you pay for 30 seconds even if you don't use 30 seconds.
- AT&T can't bill you for T-1 and Dial 1 calls on the same bill...so you pay employees to manage multiple bills.
- MCI has a special low price for interstate calls within 100 miles of your office locations. So, when you call within 100 miles, we take 3 cents off every minute during the business day...that's a special discount of about 14%.

There's no better time than now to switch to MCI Vision.

If you switch by July 31, 1991, all installation charges and your October 1991 calls are free, up to $100,000!

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Reduce your company's long distance phone, fax and data expenses by up to 16%* with MCI Vision. Call 1-800-288-8330.

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Worth Noting

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Murray Weidenbaum
Director
Center for the Study of American Business at Washington University
During his keynote speech at the ICA conference
Anaheim, Calif.

Association Watch

The **International Disaster Recovery Association (IDRA)** will hold its annual conference on telecommunications and disaster recovery Oct. 27-29 in Springfield, Mass. IDRA is a nonprofit organization of telecommunications managers interested in disaster recovery issues.

The conference will look at the use of satellite and microwave technology, as well as cellular radio and electronic vaulting for disaster recovery.

Registration is $595 before Sept. 1 and $695 after that date. The fee includes a one-year membership in IDRA.

For more information, call Benjamin Tartaglia, executive director for the IDRA, at (508) 842-0050.

Washington University will sponsor the 10th annual international conference on enterprisewide information management Sept. 4-6 in St. Louis. Entitled “Realizing the Full Value of Information Technology,” the conference will focus on organizational and people issues.

In addition to the 35 scheduled speakers, there will also be roundtable sessions each evening. For more informa-

(continued on page 22)

Net to simplify process of collecting box office info

Theaters will use PCs, EDI to record attendance.

By Salvatore Salamone
Features Writer

BEVERLY HILLS, Calif. — Entertainment Data, Inc. next week will launch the first phase of a two- stage project designed to automate the collection and distribution of box office receipt information for the movie industry.

When completed, movie theaters will use personal computers and electronic data interchange to send attendance information directly to Entertainment Data's computer facility, which will make the data available to movie industry clients as it is being collected.

Currently, Entertainment Data staffers collect information about gross receipts by making 3,000 phone calls each night to theaters across the country. The information is manually entered into an Informix Software, Inc. data base running on a mid-range AT&T 7040 RISC-based minicomputer.

Employees using terminals tied to the 7040 are notified when to call each theater — ensuring that the receipts have been totaled — and are then prompted through a series of questions to ask.

When all the receipts have been collected, Entertainment Data uses a report-writing feature of the Informix package to print customized reports for movie studio executives and movie distribution companies. The reports are on the clients' desks by 6:00 the next morning. Clients use the information to plan advertising campaigns and decide whether to increase or decrease the number of theaters where a film will be shown.

Too little, too late?

But for many clients, 6 a.m. is too late. “Sometimes a client would come here and watch for trends as the receipts were collected during the night,” said Chris Hyland, Entertainment Data's director of management information systems. “We'd have the East Coast numbers by 9 or 10 at night. The [movie industry]

(continued on page 22)

EXECUTIVE BRIEFS

BY WAYNE ECKERSON

New research network. The International Communications Assocation (ICA) in conjunction with the University of Pittsburgh last week announced plans to build a nationwide T-3 network to support research and educational activities. The Telecommunications Education Research Network (TERN), which will be capable of supporting frame relay, cell relay and Integrated Services Digital Network, will connect 30 or more universities now offering degrees in telecommunications.

TERN's backbone network will consist of four National Science Foundation (NSF) T-3 nodes, although the TERN network will run separately from NSF's national network, NSFNET. Each university in the TERN program would support an end node through which it would be connected to the backbone.

Initially TERN will receive funding from grants and foundations, such as the ICA Foundation, but eventually the goal is for TERN to be self-supporting through research work conducted by university professors on behalf of commerical organizations.

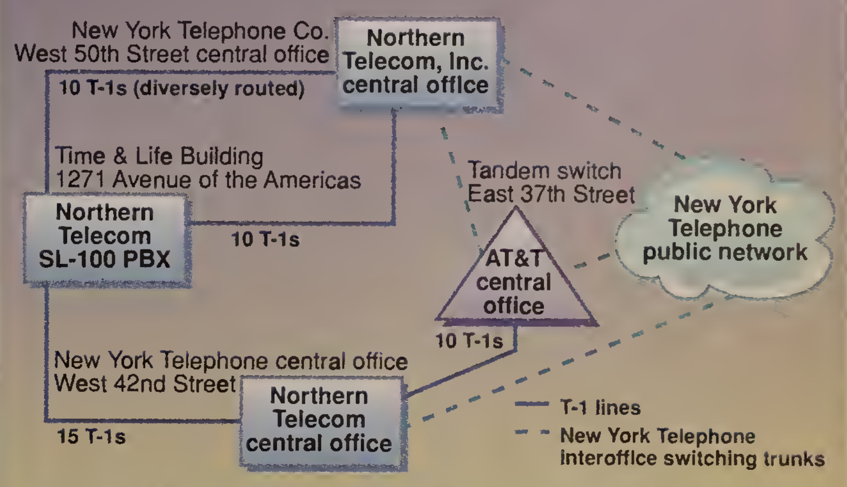
EDI Buyer's Guide. Interlink Resource Group, Inc. recently issued a 200-page manual that describes electronic data interchange software available in the North American market. Titled “The Buyer's Guide to EDI Software,” the book reviews more than 50 widely used EDI software products that run on mainframes, minicomputers and personal computers.

The manual has two sections. The first section contains two- to four-page summaries of each product, which outline information such as features, capacities and operating platforms. The second section consists of tables that compare the products in various categories, such as price and customer support.

The manual costs $395 and can be obtained by calling Fred Sammet at (214) 578-9380. ◘

Safeguarding switched calls

Time Warner's network provides alternate routing for inbound switched traffic.


New York Telephone Co. West 50th Street central office
Northern Telecom, Inc. central office
10 T-1s (diversely routed)
Time & Life Building 1271 Avenue of the Americas
Northern Telecom SL-100 PBX
10 T-1s
Tandem switch East 37th Street
AT&T central office
New York Telephone public network
10 T-1s
New York Telephone central office West 42nd Street
Northern Telecom central office
15 T-1s
T-1 lines
New York Telephone interoffice switching trunks

Through a special arrangement with New York Telephone, Time Warner receives inbound switched calls through 2 central offices, safeguarding the firm's switched traffic from a central office failure or cable outage.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: TIME WARNER, INC., NEW YORK

N.Y. Tel rewrites the book for publisher

Carrier custom designs a redundancy plan for Time Warner that results in a new tariffed service.

By Wayne Eckerson
Senior Editor

NEW YORK — While many network managers complain that their local telephone company isn't responsive to their needs, Frank Ferrara, manager of communications at Time Warner, Inc. here, has found just the opposite.

In the spring of 1988, Ferrara approached his New York Telephone Co. account representative, Robert Barker, about obtaining greater redundancy for inbound switched calls to Time Warner's main editorial offices, home to magazines such as *People, Sports Illustrated* and *Time*.

Switched calls are the lifeblood of the company, Ferrara said. Besides enabling reporters to call anywhere in the world, switched facilities allow correspondents to reach editors in New York and send stories from portable computers.

With an average of 600,000 inbound calls a month, Time Warner would have a difficult time keeping operations running after a failure like the one caused by the 1988 fire in Illinois Bell Telephone Co.'s Hinsdale, Ill., central office.

When Ferrara asked Barker about ways to safeguard switched traffic, Barker immediately began talking to New York Telephone engineers and net managers about the feasibility of routing Time Warner's inbound switched calls through two central offices using diverse routes.

Although the carrier had never offered such a service, Barker succeeded in mustering the necessary support and commitment from different sectors within New York Telephone to make the offering available as a custom service.

“Too many account representatives at Bell operating companies only market products and services their companies already offer or what they are given incentives to sell,” Ferrara said. “[Barker], however, acted as our advocate within New York Telephone and pushed through a service we felt was critical.”

Time Warner signed a three-year custom contract for the alternate central office arrangement with New York Telephone in October 1989, 18 months after Ferrara and Barker first talked about the issue. New York Telephone put the service on-line in May 1990.

Due to the interest generated about the service from New York Telephone's customer base, the carrier submitted it as a tariffed service last month (“N.Y. Tel proposes service to safeguard switched calls,” *NW*, May 13).

Under the service, Time Warner's headquarters building at 1271 Avenue of the Americas is linked to New York Telephone central office switches at its West 50th Street and West 42nd Street offices.

A Northern Telecom, Inc. SL-100 switch is tied to a switch at the West 50th Street central office via diversely routed fiber-optic cables, each of which supports 10 T-1 lines for direct inward dial

(continued on page 22)

Calif. IS directors brace for impending budget cuts

Managers take varied approaches to fiscal woes.

By Timothy O'Brien
West Coast Bureau Chief

SACRAMENTO, Calif. — As forecasts of California's budget deficit swell to a staggering $14.3 billion, directors of the state's information technology resources are huddling in budget meetings to gauge the impact of the proposed 30% spending cutbacks on their plans and programs.

With the Ways and Means Committee of the state Assembly proposing these tough measures, directors are bracing for a period of spending freezes and staff reductions that will put many information technology plans on hold for at least the next year.

"Departments need to become more efficient, which in some cases will mean moving to smaller systems and networks," said Steve Kolodney, director of the Office of Information Technology for the state.

Kolodney said efforts are being made to keep the current problem from affecting the state's long-range information processing and networking goals. He added that his and other departments have no intention of mortgaging the future or slowing down advancement due to the crisis and he is encouraging the use of technology to address the budget problem.

"If it ain't broken, don't fix it. If it's broken, fix it, but don't replace it," said James Lee, deputy press secretary for the governor's office, in summing up the state's current policy on information technology equipment.

Lee said each department's needs will be viewed on a case-by-case basis but it will require much greater justification than in the past to upgrade equipment.

In other words, the state's Department of Finance is going to take a hard look at the payback on new systems, and many expect that period will have to be shorter in order to justify a capital expenditure.

"The state is not going to completely stop, but they are going to scrutinize the type of spending they do more closely," suggested Fay Miyagi, vice-president of the Government Technology Group, a consulting firm in Sacramento. "They are going to lean more toward LANs and desktop solutions, not mainframe-based data centers."

Lee said the full extent of the problem will not be understood until the budget is approved later this month or in July. The state's fiscal year ends in June.

Consultants in Sacramento, one of the first targets of the budget cuts, are concerned because contracts are either getting cut back or not being renewed. Some vendors anticipate that requests for proposal from the state procurement office will slow to a trickle in the coming fiscal year.

Systems integrators dependent on the government are looking at layoffs to weather the storm.

In addition, some computer professionals think it will be difficult to find jobs because computer firms are not expanding in the area. And some integrators are looking for outsourcing opportunities as the one bright spot because the state will have less manpower.

One official who requested anonymity said that if there are 20% to 30% budget cuts, it's going to be "disaster city" in Sacramento. However, Miyagi asserts that the doomsday predictions are off base because technology is the only way the government can meet its telecommunications and information technology needs with less resources.

Kolodney stressed that some departments such as transportation have funding sources outside of the general fund and they will continue with business as usual. Others take a more optimistic view and look for the crisis to stimulate resourceful programs that will have lasting benefits for the state.

Net to simplify info collection

continued from page 21

people would take these numbers and do their own forecasts."

Recognizing that timely access to the information was essential for many clients, the company launched the first phase of an effort to automate data collection and distribution by installing the facilities necessary to let customers dial into the data base in order to track results.

The new capability, which will be launched next week, will enable clients to access the data base 24 hours a day. Callers will be guided through the data base via a menu-driven interface that will allow them, for example, to track a film's nationwide results or see how a film is doing at selected sites.

Clients can also get a "dirty read" of the data as it is being collected. They can then try to spot early trends instead of waiting for totals from across the country.

Future effort

The next phase of automating this process will involve letting the theaters use personal computers and EDI to send receipt information to Entertainment Data each night.

The conversion to EDI is already under way, according to Hyland. The only stumbling block is deciding which EDI data structures to use. Entertainment Data has designed its own EDI structures, but the entertainment industry is in the process of forming its own under the auspices of the Data Interchange Standards Association, Inc. (DISA).

The main thrust of the DISA effort is to support the exchange of information — not box office receipts — between movie theaters and distribution houses. The EDI standard would help eliminate the paper documents theaters mail to distributors every time they show a film. The standard would also support the exchange of information concerning cooperative advertising agreements.

In addition to its box office receipt business, Entertainment Data wants to act as a clearinghouse for box office documents and other information, providing the service to theaters and its clients.

"We want [the theaters] to be able to push a button on their [personal computers] and send the information to us," Hyland said.

This would allow a movie theater to use one company — Entertainment Data — for all its information exchange.

Association Watch

continued from page 21

tion, call Robert Benson, dean of the School of Technology and Information Management at Washington University, at (314) 889-5330.

The **Tele-Communications Association, Inc. (TCA)** will hold its annual conference and exposition at the San Diego Convention Center Sept. 23-27.

There will be more than 300 exhibitors and 60 seminars during the four-day conference, titled "Total Quality in Telecommunications." The exhibit floor will be open Sept. 24-26.

Keynote spekers include Christopher Galvin, senior executive vice-president of Motorola, Inc., and William Esrey, president and chief executive officer of US Sprint Communications Co.

Registration costs $250 for members and $600 for nonmembers.

The price for nonmembers whose companies belong to TCA is $300. Individuals whose companies belong to another communications association will be charged $400. After Aug. 1, all fees increase by $100. For more information, call (818) 967-9411.

Robert Barker and Frank Ferrara (l. to r.) discussing the custom plan.

N.Y. Telephone rewrites book

continued from page 21

(DID) and outbound switched service. The SL-100 is also linked to the 42nd Street switch via 15 T-1 lines for the same type of traffic.

Previously, Time Warner was connected to the public network only through diverse paths to its West 50th Street office. While this setup provided route diversity, it did not protect Time Warner against a central office outage, Ferrara said.

If a disaster occurs in either central office, New York Telephone's East 37th Street tandem switch will automatically redirect DID traffic through the alternate central office. The rerouting is governed by a data base of trunk translations developed by New York Telephone's Network Control Center.

Beating the bureaucracy

Barker said the main obstacle he faced in making the service available was that New York Telephone had always routed calls with the same three-number exchange prefix through one central office. Dividing calls between two central offices had never been done.

However, the New York Telephone engineers Barker talked to said the task was possible. "Up to that point, rerouting [switched calls through two central offices] had all been conjecture, but nobody had done anything about it," Barker said.

The key breakthrough occurred four months after Barker started discussing the idea within New York Telephone. An engineer in the carrier's tandem planning department said that during network outages, New York Telephone redirects switched calls to a prerecorded announcement that informs callers what has occurred.

"It dawned on us that if we could reroute calls for our own internal purposes, we could do it for customers," he said.

With that, New York Telephone's Network Design Group took Barker's request, fashioned a proposal for a limited service offering and distributed it internally for comment.

Meanwhile, he met with Ferrara to discuss the plan's progress. Barker often brought New York Telephone engineers from various departments with him to inform Ferrara about the feasibility and likely configuration of the service.

"Barker introduced me to New York Tel engineers, who had probably never met an account rep, never mind a user," Ferrara said. "The technology [we needed] was there — probably for years — but no one ever saw how it could be applied to a customer. I think that's changing."

> "The technology was there, but no one ever saw how it could be applied to a customer."

▲▲▲

Almost foiled

When New York Telephone submitted the proposal for the custom network arrangement to Time Warner in March 1989, the whole project came to a screeching halt because of pricing issues, Ferrara said.

"Their prices far exceeded what we anticipated; we flat out refused to pay what they offered," Ferrara said.

After two months of negotiations, both parties settled on prices that resembled those later issued in the tariff, Barker said.

The tariff includes a onetime installation charge, monthly surcharges for T-1 lines to the alternate central office and monthly charges for routing translations, he said.

"Their first reaction was, 'Let's charge double,' " Ferrara said. "We told them they shouldn't charge us that much considering we were buying additional circuits from them and that no company would buy the service at those prices. Fortunately, they agreed."

World News

At the International Communications Association (ICA) conference last week, **MCI Communications Corp.** expanded its international private-line service to Canada by announcing the availability of analog, 56K and 64K bit/sec private-line service in conjunction with the Telecom Canada consortium of carriers.

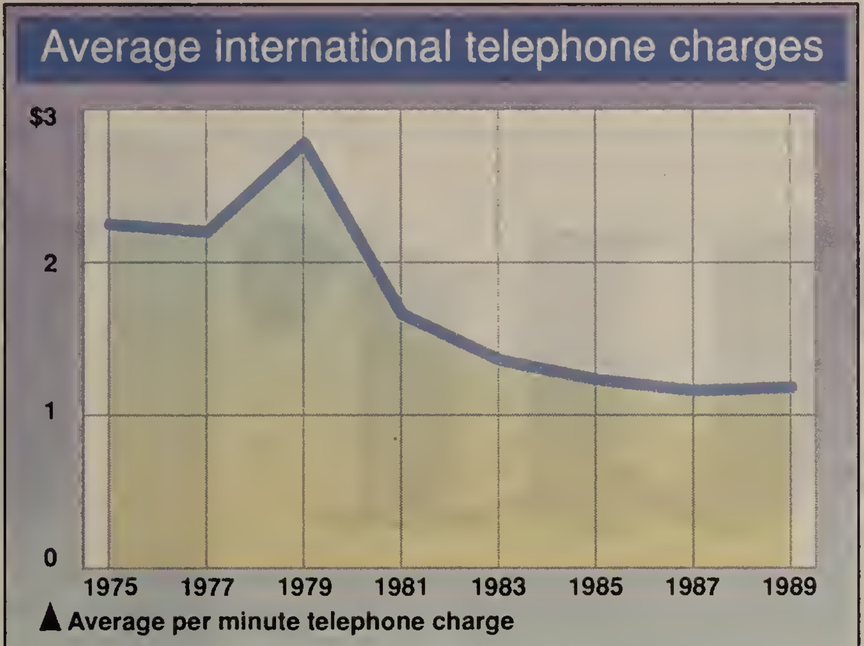
Previously, MCI only supported T-1 service with Telecom Canada. The fuller suite of analog, 56K, 64K bit/sec and T-1 service was only available from MCI in conjunction with Telecom Canada rival Unitel Communications, Inc.

MCI also unveiled terrestrial 56K bit/sec service to Mexico. Previously, the carrier only offered digital private lines to Mexico via satellite.

Also at ICA, Belgium's national carrier **Regie des Telegraphes et Telephones** announced a new international very small aperture terminal satellite service, called V-Star, and a new 384K bit/sec videoconferencing service to the U.S. with US Sprint Communications Co.

France Telecom announced it has opened an international satellite earth station in Sophia Antipolis, an industrial park in southern France, in response to demands from U.S. customers.

Dutch carrier **PTT Telecom Netherlands, BV** said it has formed a new outsourcing company, Servonsite International, BV, based in Utrecht, Netherlands, that will specialize in running users' pan-European networks. ◼



GRAPHIC BY SUSAN J. CHAMPENY SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON, D.C.

Int'l carriers to recognize one another's calling cards

Customers will be able to use card of their choice.

By Ellen Messmer
Washington Correspondent

LONDON — British Telecommunications PLC is spearheading a drive to get carriers to recognize use of one another's calling cards, a move that would enable customers to charge calls in different countries to one card.

AT&T and Japanese carrier Kokusai Denshin Denwa, Ltd. (KDD) are the first to join the British Telecom-led International Credit Card Validation Services consortium. By early 1992, the three members plan to simultaneously roll out the service, allowing users to charge calls made in Great Britain, Japan and the U.S. to the card of their choice.

"A service of this nature is something that international travelers have been calling for," said Tony Vardy, director of service development for British Telecom, at a recent meeting here. British Telecom hosted a dozen international carriers from Europe and Canada at the meeting in hopes of drumming up more interest in the project.

Vardy said the three consortium members already have the essential network structures in place to provide international credit-card validation.

"Our computer data base would set up a packet-switched link across the Atlantic to the AT&T data base. Assuming the message came back that the card was valid, then you'd be able to make the call," Vardy said.

Under the scheme, a call made on an AT&T card in Great Britain would first be charged to AT&T by British Telecom in pounds sterling, the British currency. AT&T would then bill the cardholder in U.S. dollars. "We would charge AT&T at the rate we charge the end customer," Vardy said. "It would be up to AT&T to mark up the call or not."

Although British Telecom itself hasn't decided whether to pass on to customers the addi-

(continued on page 51)

Carriers get FCC nod for Intersputnik use

Using the satellite network will make it easier to order private lines between U.S. and Eastern Bloc.

By Barton Crockett
Senior Editor

WASHINGTON, D.C. — The Federal Communications Commission recently gave its blessing to requests by domestic carriers to use the Soviet Union's Intersputnik satellite system to provide international private-line services to the Eastern Bloc.

Approval of applications from AT&T, IDB Communications Group, Inc. and TRT/FTC Communications, Inc. is expected to make it much easier to acquire private lines between the U.S. and Eastern Bloc countries by making it possible to tap into existing Intersputnik facilities, instead of forcing Eastern Bloc countries to install new facilities that work with Western satellites.

"For users, I hope this will mean they can get circuits into these countries much more quickly," said Jim Kolsrud, president of IDB's international division in Rockville, Md.

Lack of capacity

According to the three applicants, service via Intersputnik is needed because capacity on International Telecommunications Satellite Organization satellites is scarce. Perhaps even more importantly, the carriers say most Eastern Bloc countries don't have INTELSAT earth stations.

Kolsrud explained that the only Eastern Bloc countries to have an INTELSAT earth station are Poland and the Soviet Union because few countries have the Western currency to spend.

Even countries that have INTELSAT facilities prefer to use Intersputnik because it enables them to earn much-needed Western currency, he said.

"Money is an issue," Kolsrud said. "At least in the short term, [providing private-line service via Intersputnik] minimizes the investment and time lag needed to establish new facilities."

The FCC acknowledged these points late last month when it approved an application by IDB to lease five T-1 circuits on Intersputnik satellites to provide private-line service to Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania and the Soviet Union.

> If approval is upheld, carriers will be allowed to lease additional Intersputnik capacity.
>
> ▲▲▲

At the same time, the FCC approved petitions by AT&T and TRT/FTC to lease two 2.048M bit/sec circuits each on Intersputnik satellites to provide private-line service to the Soviet Union.

These decisions will be reviewed after six months to ensure that INTELSAT is not losing too much money from the arrangement and that Intersputnik is not unfairly undercutting INTELSAT prices. If approval is upheld, U.S. carriers will be allowed to lease additional Intersputnik capacity.

(continued on page 51)

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Manager, Technical Support
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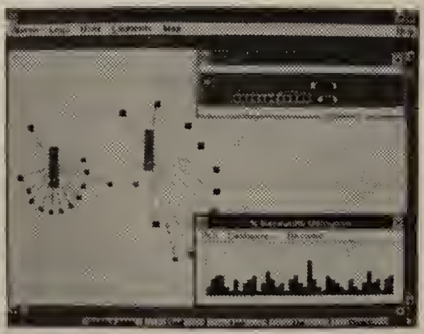

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Ports Locking	Yes	Yes – MMAC-3 No – MRXI-2	Yes
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First Look

Interlink serves up Unix-to-IBM host backup

Interlink Computer Sciences, Inc. last week announced software that enables Unix-based computers to back up and restore files to tape drives attached to IBM MVS-based mainframes.

DataStore for TCP/IP enables Unix workstation users on Transmission Control Protocol/Internet Protocol nets to access and use tape drives at mainframe data centers, which are often staffed 24 hours a day to ensure that data will be available when it's needed, the vendor said.

DataStore for TCP/IP software runs on IBM mainframes suporting the MVS operating system. It enables remote Unix devices running the Unix "rdump" and "rrestore" utilities to communicate with IBM tape management systems. The "rdump" and "rrestore" utilities are not replaced or modified on the Unix machines; instead, the IBM hosts accept the Unix data and convert it for storage on the IBM tape systems.

DataStore for TCP/IP must run in tandem with the vendor's SNS/TCPaccess and SNS/API products.

DataStore for TCP/IP costs $9,950 and is available now.

Interlink Computer Sciences, Inc., 47370 Fremont Blvd., Fremont, Calif. 94538; (415) 657-9800.

Netwise adds DOS, LAN support to its RPC

Netwise, Inc. last week said it has extended its remote procedure call product, **The Netwise System for Mainframes,** to support DOS and local-area networks.

Netwise has added support for Novell, Inc. Novell SNA Gateway, enabling users to develop applications between mainframes and DOS-based personal computers on NetWare LANs. The company said it is working to add support for Microsoft Corp. Windows to the product via IBM LU 6.2 gateways.

Netwise now supports Windows via Novell's Sequenced Packet Exchange (SPX) protocol and Transmission Control Protocol/Internet

(continued on page 27)

Oracle opens data base to Windows 3.0

By Timothy O'Brien
West Coast Bureau Chief

REDWOOD SHORES, Calif. — Oracle Corp. last week unveiled Oracle for Windows DDE/ToolBook Interface, software that enables users of Microsoft Corp. Windows-based applications to access data stored in Oracle data base servers.

Oracle for Windows DDE/ToolBook Interface is significant because it allows an ever-increasing number of Windows users to access Oracle data bases without having to run a separate front-end data base program.

The software, which runs on personal computers supporting Windows 3.0 software, establishes connections between Oracle servers and Windows applications. It also routes SQL requests to a local or remote Oracle data base server.

"This is a very important step because there are now more ways to connect to Oracle data bases than just the typical front-end data base tools," said Jim Reilly, senior director of marketing at Oracle.

Oracle for Windows DDE/ToolBook Interface comprises Oracle DDE Manager 1.0 and ToolBook Version 1.0.

DDE Manager provides an SQL interface for Windows-based applications, enabling them to establish links with any Oracle server regardless of which hardware platform it resides on.

In effect, the DDE Manager allows users to employ leading Windows-based applications, such as Microsoft Excel, Microsoft Word or Lotus Development Corp.'s Ami Professional, which support the Microsoft Dynamic Data Exchange (DDE) as front ends to Oracle data bases.

ToolBook Version 1.0 provides an interface to Asymetrix Corp.'s ToolBook, an Apple Computer, Inc. Hypercard-like product for Windows 3.0 that provides developers with an object-oriented development environment for building applications.

With the Oracle for Windows DDE/ToolBook Interface, Oracle is better positioning its data base server by expanding the types of products used to query its data bases.

Reilly said Oracle views the interface as complementing the vendor's multiplatform data base server strategy and his group is continuing development of other Windows-based products.

He pointed out that orders in the Oracle desktop division have recently doubled since the availability of the new version of the server product for Novell, Inc.'s NetWare and Oracle Card, Oracle's own front-end query tool.

Oracle for Windows DDE/ToolBook Interface runs on an

(continued on page 27)

Multi-Tech unveils muxes, adds UUCP to V.32 modems

MOUNDS VIEW, Minn. — Multi-Tech Systems, Inc. recently announced two statistical multiplexers that operate at up to 64K bit/sec and added support for a popular Unix communications protocol to its V.32 modem line.

The company's new MultiMux16 and MultiMux32 enable 16 or 32 users, respectively, to share two digital lines operating at speeds up to 64K bit/sec.

The multiplexers come in two versions: the MMH1600 can support eight or 16 channels, and the MMH3200 supports eight, 16, 24 or 32 channels. Both support channel speeds up to 19.2K bit/sec. The products are available now.

Pricing ranges from $3,499 for the MMH1608, which supports as many as eight channels, and $7,999 for the MMH3232, which supports 32 channels.

On a separate front, the vendor added support for the Unix-to-Unix Communications Protocol (UUCP) to its MultiModemV32, a V.32/V.42bis-compatible modem.

UUCP support

The feature incorporates adaptive protocol enhancing, which functions only if the data transfer can benefit from it. Support for UUCP will increase the modem's throughput by letting it use its own hardware error correction and data compression features without interference from the Unix File Transfer Protocol.

The UUCP feature will ship as a standard feature on the MultiModemV32 later this month. The modem costs $899.

For further information, contact Multi-Tech at 2205 Woodale Drive, Mounds View, Minn. 55112, or call (612) 785-3500.

DEC offers server for DBMS integration

New server provides access to DEC, Oracle, IBM data bases; enhanced Rdb supports larger files.

By Paul Desmond
Senior Editor

WASHINGTON, D.C. — Digital Equipment Corp. recently announced an SQL data base server based on existing and enhanced products that give LAN-attached workstations access to several vendors' data bases.

At the recent Database World Exposition here, DEC also announced a new version of its Rdb relational data base that offers improved performance and includes support for larger files, such as those required for compound documents.

Rdb is one of several existing products that DEC bundled together to form its new Data Integration Server, according to Vickie Farrell, marketing manager for data base systems at DEC.

The server processes requests for access to remote data bases from client software running on attached systems, and then handles the chore of locating the requested data and returning it to the client.

The server software runs on any of three DEC VAX machines to let attached client workstations access data bases from multiple vendors. Among the data bases supported are DEC's Rdb and Record Management System, Oracle Corp.'s Oracle, as well as IBM's VSAM and DB2.

Besides Rdb, DEC's Data Integration Server software includes DEC's CDD/Plus data base repository product. CDD/Plus keeps track of the data stored on the various data bases to which the Data Integration Server has access, Farrell said.

Also running on the server is DEC's Rdb/Access family of products, which supply the necessary conversions to access IBM Systems Network Architecture data bases.

Attached client workstations use the SQL/Services component of Rdb, along with DEC's Pathworks software, to communicate requests to the Data Integration Server.

A new version of Pathworks, announced in February, supports the Transmission Control Protocol/Internet Protocol networks in addition to DECnet. Along with the unveiling of the Data Integration Server, DEC announced that its SQL/Services can work over TCP/IP nets as well, allowing the server to function over TCP/IP and DECnet networks.

DEC also added a new application program interface that allows SQL/Services to be used on clients running the Sun Microsystems, Inc. OS version of Unix, as well as on clients using Microsoft Corp. Windows 3.0 software. Other client systems supported include DOS, VMS, OS/2, Ultrix and Apple Computer, Inc. Macintoshes.

DEC's Data Integration Server is available now in a variety of configurations. Pricing starts at $31,000 for a version that runs on a VAX 3100. Other versions run on the VAX 4000 Model 300 and VAX 6000 Model 500.

Rdb gets efficiency boost

DEC also announced Rdb Version 4.1, which includes a new global buffering technique that provides more efficient sharing of main memory.

Previously, if two users wanted to access the same data, the data base would read the data twice into separate virtual memory spaces on a VAX, Farrell said. Global buffering allows multiple users to access the same virtual memory space, so the data base only has to read the data once.

DEC also enhanced Rdb Version 4.1 to support vertical partitioning, which lets the data base handle large image and text files such as those required for compound documents, including text, graphics and numerical data.

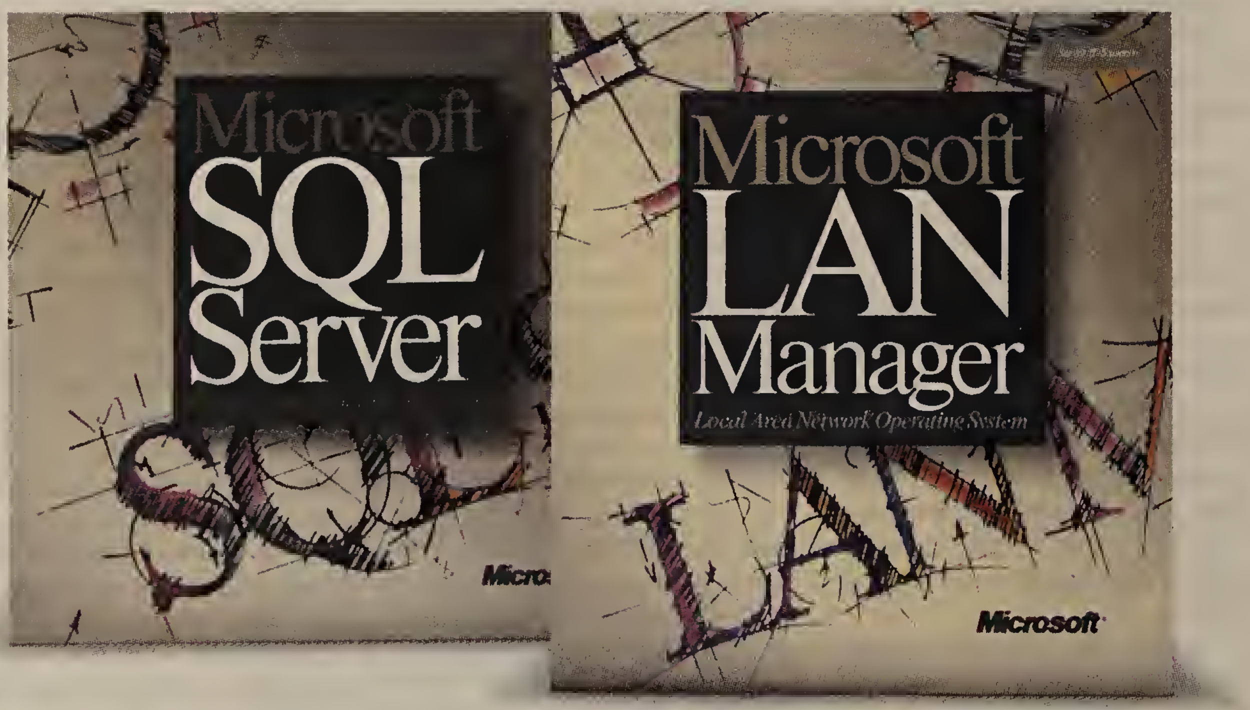
Vertical partitioning lets records within a file be separated and stored on different disks, including optical disks.

Both vertical partitioning and global buffering help reduce the I/O requirements of Rdb and improve the number of transactions per second by as much as 25%, depending on the application, configuration and data base design, according to Farrell.

DEC also announced that its SQL language under Rdb Version 4.1 has passed the National Institute of Standards and Technology tests for conformance with the Federal Information Processing Standard (FIPS) 127-1 SQL Standard. DEC claims to be the only vendor to have passed the full suite of conformance tests for FIPS 127-1 validation.

Rdb Version 4.1 will be available in January 1992. Prices range from $3,348 to $215,138, depending on configuration.

If you've got client-server computing on your mind, seek professional help.



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First Look

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Protocol connections.

Until now, the software supported client/server application links between mainframes and a variety of devices, including personal computers, workstations and minicomputers.

The new version of The Netwise System for Mainframes will be available June 30. Pricing will vary according to the hardware platform suppported.

Netwise, Inc., 2477 55th St., Boulder, Colo. 80301; (303) 442-8280.

Andrew unveils 5250 emulation, file-transfer wares

Andrew Corp. recently announced **Handshake-Alliance,** an IBM 5250 terminal-emulation and file-transfer product that enables the RISC System/6000 to communicate with the Application System/400 and other IBM minicomputers.

The product consists of a combination of workstation and host-based software and an adapter card for the microcomputer. Prices for Handshake-Alliance range from $3,750 to $4,700, depending on configuration.

Andrew Corp., 19021 120th Ave., N.E., Bothell, Wash. 98011; (800) 776-6174.

Northern Telecom unwraps low-end digital PBX

Northern Telecom, Inc. recently announced a digital private branch exchange that supports from 30 to 200 telephone lines, making it suitable for branch offices, retail outlets, warehouses, manufacturing plants and service centers of large organizations.

The **Meridian 1 Option 11** is a modular wall-mountable cabinet that can support 96 voice/data lines, 16 trunks and six Meridian Mail ports. With the addition of an expansion cabinet, the system can support as many as 224 voice/data lines, 32 trunks and six Meridian Mail ports.

The Meridian 1 Option 11 cabinet measures 22 by 25 by 12 inches. Northern Telecom said it can offer such a compact device because the latest silicon chip designs enable the vendor to pack more functions on a single card. For example, two control cards now do the work that required seven cards in a previous model.

According to Northern Telecom, the Meridian 1 Option 11 supports the entire range of Meridian 1 calling features.

The product will ship in July; prices vary depending on configuration. A package supporting 80 lines and a Meridian Mail Card option costs about $41,000.

Northern Telecom, Inc., 2305 Misson College Blvd., Santa Clara, Calif. 95054; (408) 764-2782.

Attachmate spruces up micro-to-mainframe offerings

Attachmate Corp. last week announced a new version of its EXTRA! microcomputer-to-mainframe software that takes advantage of a task-swapping feature in Version 5.0 of Microsoft Corp.'s DOS operating system.

EXTRA! Extended for DOS Version 2.3 lets users swap out large portions of memory to disk while maintaining a mainframe link. Mike New, vice-president of marketing at Attachmate, said the enhancement solves a memory allocation issue with past releases of the software by freeing up more personal computer memory to keep the host connection alive.

Attachmate also unveiled a **3270 Gateway Option** that supports an Asynchronous Systems Network Architecture microcomputer-to-mainframe link. Using standard communications ports and microcomputer modems, the software sets up an asynchronous connection with an IBM host without needing special modems or protocol conversion.

New said the software includes an Asynchronous SNA feature that is based on an IBM protocol called Asynchronous Data Link Control (ADLC), which is about twice as fast as Synchronous Data Link Control. IBM uses ADLC in its Personal Communications/3270 software.

Attachmate also added support for Novell, Inc.'s Internetwork Packet Exchange (IPX) protocols to its EXTRA! software. By eliminating the use of the Network Basic I/O System protocol and using IPX, users can save between 20K and 30K bytes of personal computer memory.

EXTRA! Extended for DOS Version 2.3 costs $425, the 3270 Gateway Option is priced at $50, and the Asynchronous SNA feature, which comes on an adapter board, costs $1,295. All are available now.

Attachmate Corp., 13231 S.E. 36th St., Bellevue, Wash. 98006; (800) 426-6283. ◪

Oracle opens data base to Windows 3.0

continued from page 25

Intel Corp. 80286-based personal computer or higher with Windows 3.0. It also requires at least 3M bytes of memory and 2M bytes of hard disk storage.

Oracle for Windows DDE/ToolBook Interface is available immediately; it costs $299.

For further information, contact Oracle at 500 Oracle Pkwy., Redwood Shores, Calif. 94065, or call (800) 633-0598. ◪

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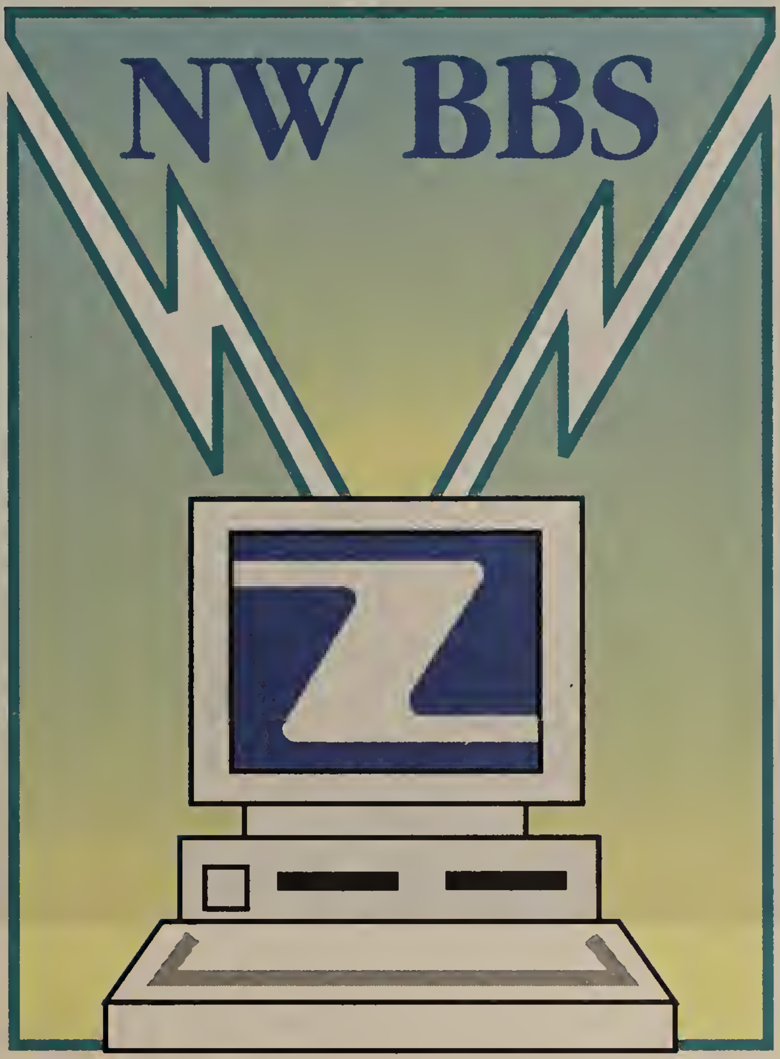

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The cost crunch.

Budgets get cut. Demar

Tradition has it that if you want something done for less, you do it yourself. So once again, the computer world defies tradition.

IS departments are discovering that many "in-house" functions can be handled more economically, and better, by outside specialists. Which is why, as belts tighten, outsourcing has become a hot topic.

It's also why IBM has dramatically expanded our range of services, to provide whatever kinds of support you need, to save you the most money.

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From disaster recovery, to network management, to application development and engineering, to training your people and helping end users, to installing fiber optics, to multivendor integration and maintenance, to name a few.

If you like, we can begin by analyzing your operation to see where, or if, we can help you. If you don't need us, we'll say so. But if we can save you money, we'll show you how, up front.

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OPINIONS

FIBER TO THE HOME

BY ARTHUR BARBER

Needed: Policies that foster cooperation

Present plans for fiber to the home appear to be designed by Washington D.C. lawyers who are more concerned with getting the plans approved by the Federal Communications Commission than whether the designs are economically sound or serve the public interest. In any case, the plans beg the critical question of how to design a reliable and economical fiber distribution system with growth for new services.

What's needed is a solution that would serve the public, the telephone industry, the cable industry and entrepreneurs hoping to provide services. Such a solution would consider the possibilities for cooperation and recognize a few simple points:

- A single fiber trunk has more than enough capacity to provide television, telephone, data service and transmission for future services.
- Most of the cost for the installation of a fiber trunk does not depend on the trunk capacity.
- The best fiber system design for television, data transmission, facsimile and graphics would transmit all services on a common trunk, as well as control distribution at the neighborhood terminal or in the user's home or office.

> If trends continue, future services will be decided by those that own the connection.
>
> ▲▲▲

Once they've recognized these points, government and industry policymakers should consider adopting the following premises:

- It isn't cost-effective to have five or six companies building independent fiber networks in a local metropolitan area.
- The most economical way to provide the great variety of circuits that new home services require is through multigigabit fiber trunks with alternative routes for reliability.
- The companies that own fiber to the home or business should not be allowed to determine what services can and cannot be offered to the public. Service providers should be allowed to lease or purchase circuits or service to the home on reasonable nondiscriminatory terms. The owner of the trunk should be able to set its own transmission rates but should not be able to discriminate among potential customers or have any control over the content of transmissions.
- The bottleneck for metropolitan-area networks is access to rights of way along public ways. State public utility commissions should establish rules whereby rights of way are available to any communications company that guarantees open access.

If present trends continue, future services will be decided by those that own the connection. We should have a policy in which access is guaranteed to anyone willing to pay reasonable, nondiscriminatory rates. The fate of service companies will then be based on decisions made by millions of business and residential consumers, not by the FCC or communications industry leaders. Only then will the thousands of entrepreneurs with dreams of new services be able to deliver their products and test public acceptance of them.

Cooperation in the shared use of fiber facilities need not change any existing service. Shared use of facilities would simply give carriers the option of acquiring fiber circuits at prices below the cost of building their own nets. By sharing fiber expenses, the costs for carriers and cable companies would decline and the consumer would be assured access to new services with reasonable rates.

Barber is president of Bethesda, Md.-based PrivateNet, which designs and installs custom private networks.

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EDITORIAL

Innovative user links expert system to net management

Network World's mission has always been to help users apply technology to enable their companies to do business better, faster and smarter.

In striving to fulfill that mission, we report on the achievements of many pioneering users. On occasion, we run across a network executive whose efforts are so innovative, they deserve special note.

One such person is Bud Turner, whose work has been chronicled in these pages several times in the past. Turner is director of data center services for McKesson Corp., a wholesale distributor of pharmaceutical and other goods based in San Francisco.

McKesson has a very small aperture terminal satellite network that supports links to hospitals, pharmacies and distribution centers nationwide. Keeping that network up and running can mean a big competitive edge, a lesson McKesson learned in 1988 when it gained $9 million per year in new orders by being the only distributor in the area to maintain communications during the Hinsdale, Ill., fire.

Turner has taken that competitive lesson to heart. In his efforts to continually enhance the management of McKesson's Systems Network Architecture-based and other networks, he has forged ties with vendors to develop products he needed that didn't previously exist.

With help from IBM and other vendors, Turner and his group developed workstation software that lets help desk, systems and net management staff automate many routine tasks.

Now McKesson is using the software with a more recently developed expert system to expand automation of responses to various network and systems problems.

Such automation can be cause for concern among management staffers, who may feel they're going to be automated out of a job. Turner has assured his staff that won't be the case.

A key to his success is making clear to his staff the department's objectives, which include a tenfold work-load increase with only a twofold staff increase. That means there's going to be a job for every current staffer and room for advancement for those who use the tools they've helped develop to do their jobs more effectively.

Pundits often say network executives should be proactive, but sometimes internal politics, end-user concerns and top management indifference make that seem impossible.

Bud Turner and his staff show just how far a company can go toward network excellence when people decide to be leaders.

OPINIONS

MACROSCOPE

BY JAMES KOBIELUS

The need for smart filters in information networks

The network has replaced the library as the first place we go in our search for information. But this is not necessarily for the better.

While networks give us more convenient access to a wider range of resources than a library, they make it more difficult for us to determine when we have enough information.

Access to such a vast amount of information can make us lose the ability to sort more relevant items from those that are merely interesting or trivial. Unfortunately, on-line information systems (IS) give us too much variety and too many distractions for our own good.

On-line systems can make things too easy because they often combine information search and retrieval into one fluid motion. The solution is not to reduce the number of electronic sources of information, but to build better user-oriented information filters into our distributed systems.

Filters may be answer

Network filters are built into some of today's most sophisticated IS. These filters provide users with customized information by sifting through multiple on-line data bases, text management systems and news services.

In addition, filters are central to certain ventures, such as the experimental "personal newspaper" developed by Massachusetts Institute of Technology's Media Laboratory, which has pioneered the concept of a truly narrowcast mass media.

Such filters are difficult to implement across networks that support diverse applications and information resources on many processing platforms.

Kobielus, a contributing editor to Network World, *is a telecommunications analyst with Fairfax, Va.-based Network Management, Inc., one of the largest local- and wide-area network systems integrators in the U.S.*

In order to build effective filters into distributed IS, we need enabling tools and enviroments, which are now becoming available. We also must integrate the filters into the network at three levels:

- **Single-client image.** With a single-client image, all systems share a seamless, integrated view of each user or client, rather than maintaining separate, potentially contradictory user profiles on each server. A single-client image enables a distributed IS to present users with a seamless, consistent level of service.

This image would include information about the user's geographic location, application and information requirements, privileges and restrictions, work group and project affiliations, topics of interest, and other personal and professional attributes.

On-line information systems give us too much variety and too many distractions for our own good.

▲▲▲

At this level of integration, the filter would sift information across multiple platforms for its urgency and relevance to the user, and then it would process the data according to user preference.

- **Comprehensive directory system.** In order for the distributed client to filter and process information across the network, a comprehensive, networkwide directory — perhaps based on X.500 — would be required.

To filter information effectively, the directory data base must contain in-depth profiles of items such as the technical parameters of information objects, including the medium (for example, ASCII text or raster graphics), size, structure, display and storage requirements of the information objects; linked files such as associated hypertext files; and contents, including details such as key words, concepts, outlines, summaries, subjects, descriptive names and commentaries. Information objects are distinct units of information that can be processed independently, such as text files and video clips.

With this directory, the user could query, retrieve and manipulate information across all locations, networks, data processing platforms, operating systems and applications. The data base fields mentioned above would serve as an electronic card catalog, similar but more inclusive than directories embedded in today's sophisticated image and document management systems.

- **All-encompassing network information structure.** To ensure that no relevant items are overlooked, there should be a universal network information structure that provides transparent access to all information objects.

This information engineering feat requires the use of object-oriented data base technology. Each information object should be profiled in the master network directory, ensuring that client queries span the entire range of relevant information rather than just isolated character-oriented data bases.

These three architectural components — the single-client image, master directory and master information structure — could harness the network completely and efficiently to the needs of its users. Information overload would still be an occupational hazard for those of us who rely on networks, but we would at least be gorging ourselves on the wheat and not the chaff. ◘

LIKE ALLIGATORS IN A SWAMP, unforeseen problems can really put the bite on a communications operation. Many managers find themselves wrestling with these networking reptiles every day.

If you've survived an "alligator attack," share it with our readers by calling Susan Collins, assistant features editor, at (508) 820-7413 or fax your idea to us at (508) 820-3467. Alligators should be 1,200 words in length and submitted either on disk or via modem.

TELETOONS

BY FRANK AND TROISE

The Future of Networking
Scenario 16
Lacking adequate terrestrial links, companies participating in videoconferencing will explore extraterrestrial ones.
The resolution's fantastic.. but are these people reliable?
Phil Frank

LETTERS

Proteon's protest

We're pleased that Proteon, Inc.'s p4100+ multiprotocol router was found to "excel in the remote routing tests" in your recent Network Test Series. However, discrepancies between conditions generated in some of the test suites vs. those typically encountered in the real world demand clarification.

The multifunctionality and price/performance ratio of the p4100+ make it a strong choice in real-world situations. The article focused exclusively on Ethernet-only environments, which represent only a portion of the internetworking market, and did not adequately reflect real-world conditions in those environments.

For example, the stress test scenario created a flood (more than 10K packet/sec) of small packets with small interframe gaps. While small frame/small gap traffic reflects typical Telnet transmissions, Telnet traffic rarely demands more than 1,000 packet/sec of throughput.

In fact, major regional networks also generally pass less than 1,000 Ethernet packet/sec, and the vast majority of that traffic contains larger packets and is not burst oriented. For more than a year, the p4100+ has performed well under these requirements.

In summary, many of the article's conclusions directly contradict the market-proven strengths of the p4100+, which are unmatched token-ring price/performance, effective Ethernet connectivity and — as the article pointed out — optimal remote routing capabilities.

Nathan Kalowski
Vice-president, marketing
Proteon, Inc.

Editor's response: The test examined router performance under six distinct network traffic loads. One test — using a small 64-byte packet and the smallest interframe gap (9.6 msec) — was designed to be, and was presented as, a stress test, the

(continued on page 38)

Women in communications

Few have made it to the top, and seldom are women given as much responsibility or pay as men.

During the 1980s, a small vanguard of women managed to penetrate the upper echelons of telecommunications management. In the coming decade, an increasing number of women will be guiding the voice, data and video strategies of some of the country's largest industrial and service companies.

Many of the most prominent women in data communications entered the field in the early 1970s, long before their companies officially realized any strategic need to connect disparate systems. Some started as programmers and others as data processors. Many more were trained as teachers, historians, psychologists and even linguists, all of whom gravitated toward technology more by chance than by planning.

"Women of my generation were rarely trained to do long-term career planning," says Laurie Bride, manager of network architecture for Boeing Computer Services Co. of Seattle.

Although she planned to become a commercial artist, Bride began her 20-year technical career by taking a job as a clerk at an electrical engineering firm, where she coded data punch cards. She became the resident computer expert because the engineers for whom she worked distrusted the machines.

After joining Boeing in 1965, Bride expanded her expertise as a computer consultant by specializing in minicomputers. She still credits the aerospace company for encouraging its employees to develop new skills.

"If an opportunity came up that looked interesting, you could tell management you thought you could do the job," Bride recalls. "I don't ever remember anyone saying no."

"Telecommunications has played an overriding role in our company," says Susan Mersereau, who joined Tacoma, Wash.-based Weyerhaeuser Co. in 1980 to help the forest products company devise a response to the then-pending dissolution of AT&T. She was appointed vice-president and general manager of Weyerhaeuser Information Systems two years ago.

"Telecommunications determines how we will connect the entire company, and consequently, it's extremely strategic," Mersereau says. "In a sense, the computers become just one more way to access the network, particularly in a distributed environment."

Despite recent progress, this vision usually is not clearly defined. As a result, many champions of innovative data communications strategies encounter direct conflict with those who still endorse the status quo. While no woman would claim that men always have an easier time going against the mainstream in an attempt to promote innovative changes, this scenario can sometimes be acute when the communications professional promoting the change is a woman.

"The minute we said, 'Throw out the mainframe,' the battle lines were drawn," says one female network manager at a major Southern manufacturing company who requested anonymity. "It became a women's issue because a woman was leading the department recommending the change."

Scattered progress

Technical experts like Bride and Mersereau soon found themselves ideally positioned to shepherd departments that were created to meld voice and data communications. By the mid-1980s, this domain typically included hundreds, even thousands, of personal computers that were rapidly being connected across local-area networks.

Mersereau recommended early on that Weyerhaeuser centralize its telecommunications departments. "They asked me if I wanted to manage the then-separate voice, video and data departments, which con-

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Bermar is a free-lance writer based in Newton, Mass.

By AMY BERMAR

ILLUSTRATION ©1991 JAY LEACH

Susan Mersereau, vice-president, general manager
Weyerhaeuser Information Systems

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sisted of about 100 people at the time," she says. She agreed, and now that unified group has become part of the larger information systems organization, which totals about 400 employees.

As virtually all her colleagues do, Mersereau concedes that relatively few women will reach the level of vice-president. In part, that's because there is a limited supply of female contenders for the post: Of the 2,000 or so existing management-level positions in data communications, only a fraction represents the upper reaches, recruiters say.

"At the senior level of job placement, about 10% to 15% of my candidates are women," says Nat Freedman, an executive recruiter based in the New York area. "They just don't have the necessary 15- to 20-year track records. That's going to take a few more years."

On the whole, the job responsibilities of female telecommunications managers parallel those of their male counterparts.

While the highest placed of all telecommunications managers are orchestrating comprehensive data communications strategies, many more supervisors are working in hands-on technical positions, designing wide-area networks, downsizing efforts and even creating videoconferencing capabilities for their companies.

Like their male counterparts, many women in communications say they have set their sights on the chief information officer's office. At the same time, virtually all of them speak — at least on the record — about concentrating on one project at a time. Like most savvy political operators, these managers hope that a string of successes will ultimately provide satisfactory career advancement.

Many female communications professionals who joined their corporations at the outset of their career found that at least one promotion they received dovetailed with a concerted effort to train women as managers.

For example, Roberta Frackman joined a major New York bank in 1967 as a programmer trainee. She says her early opportunities for advancement were clearly due to corporate policy. But once she had passed the lowest levels of management, there were no personnel policies aimed at speeding the promotions of women.

By the time she left the company in 1987, she was senior vice-president of telecommunications. "I was one of the first," she says, "and one of the few."

Boeing's Bride also recalled the forceful impact of federal employment statutes in the mid-1970s. "In 1974, there was a big push for equal employment opportunities," she says, "and I got my first opportunity at Boeing because of that." In the past few years, that emphasis has reappeared, and many large companies recognize that women and minorities remain underrepresented in most executive positions.

"Now there's a resurgence to put women in management and upper management," Bride says. "But I feel like I've earned my stripes."

1990s management style

As the second generation of female managers achieves professional prominence, many women are being widely credited with ushering in a new, nonhierarchical style of leadership. The foundation: team building, personal relationships and an ongoing effort to recognize individual contributions.

"Women can be excellent technical managers," says Cheryl Currid, who managed 30 large LANs as the former director of applied information technology for Houston-based Coca-Cola Co. Foods Division. In mid-February, Currid departed Coca-Cola to set up her own consulting firm, Currid & Co.

One reason women can do well in technical management, she says, "is due to the ability to have a great deal of empathy with what [their] staff is going through."

Bride agrees. She works closely with the three managers who report to her and suspects that her open-door management method is emblematic of Boeing's emerging corporate style. "My company is undergoing a cultural change," she says, "and the way I work with people is more in line with the kinds of changes that it's trying to make."

Cheryl Currid, founder
Currid & Co.

Many female communications managers infuse their business relationships with a highly personal style that appears to prove effective in the workplace. The key factors are: consulting employees in advance about plans that would affect them, making sure employees know what is expected, providing tangible ways to improve performance when it doesn't measure up to expectations and an abiding freedom to question policies without fear of judgment.

Mersereau, for instance, hosts regular breakfast meetings with small groups of employees. She hopes to meet her entire division in this fashion at least once a year. These contacts are supplemented with a weekly voicemail session intended to clarify questions, solicit suggestions and air other issues.

Employees can also deliver their messages anonymously.

Laurie Bride, manager of network architecture
Boeing Computer Services Co.

Mersereau encourages her managers to review the performance of employees with positions two rungs down the ladder to eliminate the likelihood that fear will influence an employee's comments.

"I see a lot of problems when people are afraid of their managers," says Mersereau, who tries to pattern her managerial style based on how she liked to be treated by supervisors. "In a technical area, this means that someone won't raise the red flag because they want to make everything look OK. I still see a lot of instances of that, and then the flag isn't raised until it's too late."

Women now represent approximately one-third of the 1.5 million systems analysts, computer scientists and programmers working in the U.S., according to the U.S. Department of Labor's 1989 figures. Yet at nonmanagerial levels, a continuing pay disparity reflects the long-standing nationwide statistic that women generally earn approximately 70 cents for every dollar earned by men in comparable fields.

Senior female data communications managers report salaries ranging from $65,000 to well above $100,000, with some of the variation due to the higher costs of living in major urban areas. Some of the women interviewed for this article say they think men earn more than they do, while others think they are about par with their male peers.

Several female managers freely note their own lack of technical training in college — and sometimes the lack of a degree altogether. The majority maintain that this hasn't hurt their upward progression. However, they acknowledge that many of the new hires — both male and female — who have a technical background but are subordinate to them earn substantially larger salaries than they do.

In addition, recruiters say that the best paying jobs are unlikely to be filled by women because of a widespread lack of bottom-line responsibility among women, which is best acquired midway through a manager's career.

"There's a general reluctance in the industry to give a female line management responsibility," says Freedman, who has worked in the telecommunications industry for 30 years and now runs Nathan Freedman Associates, Inc., in Marlboro, N.J. "That's the single biggest weakness in the growth of women in senior-level positions."

Freedman spent several months trying to fill a senior telecommunications post for a Fortune 500 company that included

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BYPASS EQUIPMENT

Making ends meet

CONTINUED FROM PAGE 1

tailored for low-power spread-spectrum radio transmission in the 900-MHz band and microwave equipment operating as high as 23 GHz. Some gear even uses modulated infrared light.

Many companies also depend on private fiber to bypass telephone company facilities. Each of these products offers advantages and disadvantages with regard to cost, distance, licensing and the effect of environmental and atmospheric conditions.

Private satellite-based networks are also considered part of bypass because they deprive both local and long-distance carriers of their typical business. But because satellite carriers and equipment were covered in a previous issue ("New pricing makes VSAT nets far more attractive," *NW*, Feb. 25), this Buyer's Guide will focus on bypass equipment used to establish the equivalent of short-haul, telephone company-provided terrestrial circuits.

Mier is president of Mier Communications, Inc., a Princeton Junction, N.J.-based network consultancy that specializes in customized protocol analysis and planning.

Why bypass?

According to James Pruitt, director of on-line operations at Codex Corp. in Schaumburg, Ill., users pursue bypass primarily for three reasons: cost savings, route diversity and backup to critical terrestrial links, and insuffcent bandwidth or facilities from the local carrier.

Pruitt, who has been involved in scores of bypass arrangements in his previous positions as manager of telecommunications engineering for Bank of America National Trust & Savings Association and regional manager of telecommunications for American Airlines, Inc., says the type of bypass, the time required for in-

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Users looking for bypass options face a large number of alternatives.

(continued from page 35)

stallation and the cost are variables that often are determined by the individual user configuration and the particular local exchange carrier that serves the user.

"You are almost constrained to getting private construction from the local exchange carrier," Pruitt says.

This means that whether a private cable facility is being installed between user sites or between a user site and a long-haul carrier's point of presence, invariably, the local exchange carrier will install it.

It's ironic that although the local exchange carriers derive substantial revenues from these operations, they still lament their losses due to bypass (see "LECs lament lost dollars," this page).

Pruitt notes, however, that the different Bell operating companies vary significantly in the type of special construction they offer and the amount they charge.

"Illinois Bell [Telephone Co.], for example, is usually willing [to undertake special construction projects], but their cost is outrageous," Pruitt says, while "Southwestern Bell [Telephone Co.] is very quick and responsive [to special construction requests]."

Buy or lease?

A special construction bypass arrangement more often than not is owned by the carrier that installed it and is then leased over a long period to the user, according to Pruitt. He advises users to seriously consider the alternative of buying the facility outright.

Pruitt notes, however, that the decision in any particular case must be based on the specific situation.

By purchasing the facility, a user can avoid sizable recurring charges. However, this requires the user to pay a substantial amount of capital up front. This amount can range from a minimum of $50,000 for a microwave link to $1 million or more for a private fiber-optic system.

But the investment is often worthwhile. "Cost-wise, we broke even in three years," says William Spies, vice-president of the telecommunications division of First National Bank of Maryland, headquartered in Baltimore.

He explains that the complete capital expenditure for the bank's outright purchase of its private microwave network was regained in three years from its savings over carrier-provided services.

The decision whether to buy or lease becomes even more complicated when considering other long-term trends.

According to Paris Burstyn, a telecommunications analyst with Business Research Group in Newton, Mass., both the local and long-haul carriers are responding to bypass' proliferation in a positive way by offering more reasonably priced, flexible services. Examples of this include newly tariffed route diversity options and fractional T-1, he says.

Proliferating dishes

Most experts agree that private microwave is the largest single way users do bypass today. There is plenty of visible evidence of this trend, such as the growing number of microwave dishes on rooftops of users' buildings in major metropolitan areas.

Microwave link distances depend on the carrier frequency employed and the data rate, which translates directly to the signal modulation technique used and transmitter power levels.

The two fixed parameters of a customer configuration typically are the distance to be covered and the data rate to be achieved. The two variables that can be adjusted are the transmit power level and the frequency.

Distances supported at the relatively high 18- and 23-GHz frequencies are generally not as far as at lower microwave frequencies, say in the 2- to 15-GHz band. Of course, long-distance bypass nets can be created by setting up chains of microwave transmitters and repeaters.

The proliferation of private microwave, however, has resulted in congestion at the lower microwave frequencies in many regions. Thus, in congested areas, most new commercial microwave installations must operate at the higher frequencies.

In addition, all private microwave users need to obtain licenses from the Federal Communications Commission before they can operate their radio equipment. This bureaucratic requirement adds to the cost and delay of deploying microwave.

Microwave communications is generally limited to no more than 25 miles, at which point even the Earth's curvature becomes a limiting factor. Beyond that distance, microwave repeater stations are necessary.

These stations can add considerably to the cost. In addition to the price of the electronic transmit/receive relay equipment, there are also the property and construction costs associated with erecting a relay tower.

In some cases, users have found that the bottom-line cost of microwave is higher than the cost of using telephone company circuits.

Microwave users

Users install bypass for many reasons. One is reliability. The First National Bank of Maryland, for example, was dissatisfied with the carrier-provided T-1 services it was receiving.

"Our T-1s were available only about 93% of the time, even though AT&T was warranting 95% availability," Spies says. But since the microwave network was activated a few years ago, net availability has shot up to 99.998%, he adds.

Another reason, cost savings, was a major factor in the Massachusetts State Lottery's decision to go with bypass.

According to Lou Demas, telecommunications manager with the Lottery, the breakup of AT&T in the mid-1980s wreaked havoc on the extensive network of tariffed leased lines that the Lottery had installed across the state. When the postdivestiture tariff structure finally settled down, the Lottery's monthly cost for dedicated circuits had increased by a factor of five.

The Lottery responded by replacing most of its dedicated terrestrial trunk circuits with a 21-node private microwave network. "What are we saving? On the order of $74,000 per month," Demas says.

Private fiber

In addition to microwave, Codex's Pruitt says private fiber-optic lines are becoming an increasingly popular bypass technique, especially among Fortune 1,000 companies. For the most part, private fiber-optic links constitute an alternative access arrangement that links the user directly to an interexchange carrier.

"The biggest problem with private fiber is rights-of-way," Pruitt says. Unlike microwave, which requires a line-of-sight path through open air that is subject to FCC licensing approval, a private terrestrial cable facility needs approval from owners of the property through which the cable passes.

The user organization doesn't necessarily have to go out and acquire these rights-of-way on its own, however. Both local and long-distance phone companies are usually willing to undertake these special construction jobs using their own rights-of-way such as telephone poles or conduit along highways.

However, while a privately owned fiber link can provide virtually unlimited transmission capacity, it is also the most expensive bypass alternative and may require the most time to put in place, Pruitt says.

Radio alternatives

Microwave is not the only radio transmission bypass technology in use today. Under Part 15 of its rules, the FCC now allows vendors to produce radio transmission equipment that operates in any of three narrow frequency bands. It also permits users to purchase and deploy this equipment without having to undergo the traditional frequency clearance and operating licensing procedures.

The catch is that equipment built under Part 15 rules must operate at very low power levels — less than 1-watt peak.

As shown in the chart on page 38, equipment is now available that ranges from radio local-area networks to low-power LAN-to-LAN radio bridges that operate within Part 15 of the FCC's rules.

By using the spread-spectrum transmission technique, many Part 15 equipment vendors maximize the distance and transmission quality of their gear.

Many of the new personal

(continued on page 38)

By purchasing the facility, a user can avoid sizable recurring charges. However, this requires the user to pay a substantial amount of capital up front.

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LECs lament lost dollars

To hear the local exchange carriers tell it, bypass costs them about $3 billion in potential annual revenues, according to documents the Bell operating companies have filed with the Federal Communications Commission.

Local exchange carriers often give the bypass threat as justification for raising telephone bills. This is akin to a vendor raising the price of its offering because a competitor sells a product that has about the same functionality except with faster delivery and at a lower cost.

Bypass currently represents a miniscule amount of traffic volume compared to the overall volume the local exchange carriers handle. But this may not be the case for long.

"The local exchange carriers' [lost revenue] figures are overstated," says Steve Sazegari, staff analyst for telecommunications at San Jose, Calif.-based Dataquest, Inc. "And besides, revenue is a lot different from traffic."

Even so, Sazegari and other analysts predict that bypass could grow significantly in scope and volume during the next few years. Just last month, the FCC issued a ground-breaking notice of proposed rule-making that would, if enacted, open up the local exchange carriers' telephone network and central offices for the collocation of alternative access providers and their equipment ("FCC plans to open bypass net options," *NW*, May 13).

"If new regulations the FCC has proposed take effect, bypass will be moving down to smaller companies, [which] will start taking advantage of it," says Paris Burstyn, telecommunications analyst with Business Research Group in Newton, Mass.

Besides a changing regulatory landscape, which tends to favor innovation and price competition over protecting the local exchange carriers' monopoly, other emerging technologies and services could accelerate the use of bypass.

"Cellular [telecommunications] is also bypass," Sazegari says. "We haven't seen the whole effect yet. Cellular, cable television and personal communications networks will be the major bypass vehicles in seven to eight years."

Cellular telephony has become enormously popular during the last decade — mainly for mobile voice communications. Its use as a bypass technology for stationary voice and data applications is just beginning to be explored.

According to FCC rules, every cellular area is served by at least two cellular licensees, one of which is the local telephone company. Still, having at least two competitive carriers facilitates use of cellular telephony for diverse routing and backup applications — a primary motivation for users to explore bypass alternatives.

Sazegari notes that voice currently constitutes the bulk of bypass traffic, which he estimates at 60%, compared to 40% for data. "But the amount of data is increasing," he says.

— *Edwin Mier*

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Bypass alternatives

Vendor	Product	Transmission technology	Typical applications	Distance, data rates supported	Transmit power, licensing, limitations	Description	Interfaces, protocols supported	Price
American Laser Systems, Inc. **Santa Barbara, Calif.** **(805) 967-0423**	Model ALS851	Wireless, LED-generated, infrared light wave	Point-to-point T-1 capacity links up to 1 mile	Typically under 1 mile; T-1 or 2.048M bit/sec CEPT/E-1 data rate	Licensing or rights-of-way not required in the U.S.; requires line of sight, clear atmosphere free of fog, smog or smoke	Infrared transmitter/receiver for open air T-1 transmission up to about 1 mile	Accepts standard T-1 or CEPT/E-1 signal input; AMI, B8ZS or HDB3 (CEPT only) line coding supported	$14,000 per link (both ends, duplex arrangement)
California Microwave, Inc. **Sunnyvale, Calif.** **(408) 732-4000**	RadioLink, Models CM-91 and CM-24	Low power, spread spectrum; directional or omnidirectional transmission; 902 MHz to 928 MHz (CM-91) or 2.40 to 2.48 GHz (CM-24)	Wireless LAN; point-to-point links up to 5 miles	From 800 feet (within typical office building), to 5 miles via line-of-sight directional transmission; data rate up to 250K bit/sec per subnetwork	1-watt peak output power; no user license (FCC's Part 15); uses frequency-hopping spread spectrum for immunity to interference	1- to 8-port stand-alone unit for point-to-point or multipoint wireless data transmission	Ethernet LAN; Apple Computer, Inc. AppleTalk; RS-232; RS-442/449; RS-485; V.35; X.21bis	$3,450 (single-port, 900-MHz operation) to $5,280 (8-port, 2.4-GHz operation)
Digital Microwave Corp. **San Jose, Calif.** **(408) 943-0777**	DMC series of microwave transceivers	Directional microwave; different models support wide range of frequencies; most commercial U.S. users will use 18 GHz or 23 GHz	Point-to-point high-capacity digital transmission for voice, data, video; bypass of local exchange carrier directly to interexchange carrier's point of presence	Typically up to 10 miles at 23 GHz, up to 15 miles at 18 GHz (farther at lower frequencies); data rates typically 1 or more T-1 (or CEPT/E-1) up to DS3 per microwave link	Generally less than 1 watt of transmit ouput power; requires FCC licensing; attenuation problems due to heavy rain possibility at higher frequencies	Indoor/outdoor packages; antenna-mounted or stand-alone control units; built-in high-speed digital multiplexing	Accepts standard T-1 or CEPT/E-1 signal inputs; some models support DS3 (45M bit/sec) or CEPT3 (34M bit/sec) signal inputs and tranmission formats	From $7,000 to $50,000 per transmit/receive station, depending on frequency, data rate, antenna, other options
Math Associates, Inc. **Westbury, N.Y.** **(516) 334-6800**	Unimux 892	Fiber-optic transmission over privately owned single-mode fiber cable up to about 15 miles	Multiplexed digital traffic (such as a combination of T-1, LAN-to-LAN) over a high-speed fiber-optic link	Customer requires rights-of-way for fiber cable; multimode up to 5 miles, single mode up to 15 miles; link data rate is 69M bit/sec	LED-generated fiber-optic light wave transmission (850 or 1300 nanometer); no licensing, but customer needs right-of-way access for full terrestrial cable run	Private fiber-optic-based multiplexing and transmission system for point-to-point link distances up to several miles	Ethernet or token-ring LANs; RS-232; RS-424, V.35, T-1	Starts at $2,950 per link (units at both ends, single fiber link); interface/ channel cards from $800 to $1,800
Persoft, Inc. **Madison, Wis.** **(608) 273-6000**	Intersect Remote Bridge	Low power, spread spectrum; omnidirectional transmission; 902 MHz to 928 MHz	Wireless LAN; LAN-to-LAN bridging across open areas up to 1,000 feet; intrabuilding or campus environments	From 100 to 250 feet in enclosed areas; 1,000 feet in open areas; data rate up to 2M bit/sec	0.25-watt output power; no FCC licensing; no line of sight required; affected by walls and structures but unaffected by weather	PC software, card and radio transmit/receive unit for LAN-to-LAN bridging	Ethernet LANs (up to 2 LANs supported simultaneously per PC node); Spanning Tree Protocol for bridging	$4,995 (requires minimum of 2 LAN-to-LAN bridged link)
Racon, Inc. **Seattle** **(206) 241-1110**	Micropass Model 8051	Directional, line-of-sight microwave; 23 GHz	Combination Ethernet-to-Ethernet bridged link at full 10M bit/sec LAN rate, plus T-1 channel	Up to 10 miles; data rates from single 64K bit/sec channel to combination 10M bit/sec Ethernet, plus a T-1 capacity channel	Output power not specified; requires FCC's Form 402 licensing; requires line-of-sight path	Stand-alone controller with 1 or more interfaces; 19-in. diameter transmit/receive microwave antenna	Ethernet LAN (unit includes a self-learning LAN bridge); V.35; RS-422; T-1; CEPT/E-1	$8,900 (transceiver supporting a 64K to 124K bit/sec link) to $12,900 (Ethernet, plus T-1)
Telesystems SLW, Inc. **Don Mills, Ont.** **(416) 441-9966**	ARLAN 450	Low power, spread spectrum; omnidirectional transmission; 902 MHz to 928 MHz	Wireless LAN (Novell, Inc. NetWare compatible); LAN-to-LAN bridging across open areas up to 6 miles; intrabuilding or campus environments	From 500 to 3,000 feet diameter area within office buildings or factories; up to 6 miles with direct line of sight in free space	1-watt peak output power; no user license (FCC's Part 15); uses direct-sequence spread spectrum	PC plug-in card and radio transmit/receive unit (can be built on card or remote to the antenna location)	Card plugs into standard PC bus; designed for NetWare LANs, radio links transparent to users	$1,500 per card/node

AMI = Alternate mark inversion
B8ZS = Bipolar eight zero code substitution
CEPT = Conference Europeenne des Postes et Telecommunications
HDB3 = High-density bipolar 3

This chart includes a representative selection of common bypass technologies and products. These vendors may offer other related products, and other vendors not included may offer a full range of products.

SOURCE: MIER COMMUNICATIONS, INC., PRINCETON JUNCTION, N.J.

Buyer's Guide

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communications network technologies that are now in the prototype stage and being tested around the U.S. also operate in the FCC's Part 15 frequency bands and are limited to the same maximum power constraints, says Phil Arst, a consultant with Communications Strategies Associates, a Cupertino, Calif., company that specializes in bypass networking.

According to Arst, except for Part 15 equipment, all other radio-based bypass technologies require users to obtain FCC licenses.

Some other broadcast radio bands are also available to users, but these do not support the two-way interactive communications that most bypass applications require, Arst says. One such broadcast radio technology is the video blanking interval that is a part of regular broadcast video transmission. A similar broadcast capability is available from FM radio stations, he adds.

Arst advises users to thoroughly explore all available radio alternatives before deciding on a bypass technology, even if it means approaching the FCC for a license to use a particular frequency band.

Route diversity

Users are well aware that placing all their eggs in one basket makes them vulnerable to catastrophe, so finding ways to create a diversity of routes to back up circuits has become a major consideration.

Route diversity is sometimes available from the local exchange carrier as a tariffed service (in which case it is not bypass) or a special-arrangement (which counts as bypass).

"Alternate cable routes are among the cheapest — and often the quickest to install — forms of bypass," Codex's Pruitt says. However, both these qualifiers depend on the availability of alternate-route options in a particular area.

Whether an organization needs a high-capacity link across the street or across town, it is clear that more bypass technologies and products are available today to help network users make ends meet. Simply evaluating the alternatives and selecting one may be the biggest problem that many users face. ☐

Letters

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idea being that demands on routers will increase over time.

Exploring GPS further

Keep up the good work. Each week, *Network World* is the first trade publication I read. In fact, hardly a week goes by that I don't refer to it for job-related information.

Your Buyer's Guide on private-line services by Daniel Briere ("Familiarity breeds content," *NW*, April 22) was typical of the kind of article I find very useful. It provided me with information on direct leasing while keeping me abreast of a broader market spectrum.

The large comparison charts that accompany the article are a good tool. However, some clarifications are needed in reference to the explanatory sidebar, "Chart information made simple."

One of the network timing sources mentioned is LORAN-C. The article states that the LORAN system is run by the Department of Defense. However the LORAN system is owned by the Department of Transportation and operated by the U.S. Coast Guard, which is part of the Department of Transportation, not the Defense Department.

The Global Positioning System (GPS) is owned and operated by the Department of Defense. While both LORAN and GPS can indeed furnish network timing reference signals, it's important to distinguish between the two since GPS provides a much more accurate signal.

Network timing issues are important. Improper timing selection, imprecise carrier timing derivation and mismatches between true and not-so-true Stratum 1 and Stratum 2 sources are but a few of the hidden pitfalls in designing and implementing a smoothly running digital network. Net managers and designers must be well versed on these issues because carrier representatives often are not.

The GPS is also worthy of a further look by *Network World*. Not only does the GPS provide a timing source that is literally worldwide and better than Stratum 1, but with a single off-the-shelf receiver, construction crews can locate structures such as microwave towers to centimeter accuracy, an operation requiring tracking of mobile resources to pinpoint the whereabouts of those resources.

David Starr
Communications specialist
Air Force SPACECOM
Colorado Springs

Are you inviting fraud?

Toll fraud is a very hot issue and major concern to all companies that use a private branch exchange ("Long-haul carriers may offer toll-fraud monitoring," *NW*, April 29). We have been warning our clients for years of their exposure to fraud.

Most executives don't realize they have their back door open and the welcome mat out for hackers. Additionally, the point should be reinforced that the customer is responsible for these charges (at least for now), unlike cases of credit card fraud. As your article pointed out, the cost and liabilities can be enormous.

The very feature that many executives love — remote access — is actually an invitation to abuse and fraud. While some solutions, such as security devices, exist, the best way to protect your firm is to shut off the remote access fea-

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Downsizing from the top down

By CHARLES BRUNO

As have scores of other users with IBM Systems Network Architecture nets, information systems managers at Pennsylvania Blue Shield realized they needed to integrate their growing legions of remote local-area networks into their corporate SNA net.

But it took a challenge from the Camp Hill, Pa.-based health care insurer's top executive to get IS staffers thinking along those lines. That new, tough look led to a major network downsizing effort at Pennsylvania Blue Shield, which, with more than 89 million claims processed in 1990, is the largest health care organization in the U.S.

The story began a little more than two years ago, when Pennsylvania Blue Shield President and Chief Executive Officer Samuel Ross challenged some of his top lieutenants to find a way to increase employee productivity and refine service to customers and health care providers.

Ross' request was the catalyst for a major network migration in which the company decided to scrap a point-to-point net linking remote terminals to IBM mainframes in favor of a series of interconnected token-ring LANs supporting personal computers and terminals linked to cluster controllers.

Today, as they put the finishing touches on the project, Pennsylvania Blue Shield's network managers say the exercise is a fine example of how companies should marry business goals to

(continued on page 40)

Bruno is Network World's *assistant managing editor — news.*

When Pa. Blue Shield's CEO dared workers to improve customer service, Richard Buehler and his IS team opted for a major net overhaul.

PHOTOGRAPHY ©1991 BRIAN HUNT

(continued from page 39)

network and IS needs.

"When we reexamined the business objectives, it became obvious [that] we needed a new infusion of technology to support new applications that could make our organization a leader for other companies in the market to follow," says Richard Buehler, director of information strategy.

PHOTOGRAPHY ©1991 FRED PROUSER

Pa. Blue Shield's Mike Kinsey and Robert Thomas eye net operations.

Embracing client/server nets

Ross' challenge triggered a series of meetings in which the IS staff wrestled with ideas on how to redesign their network setup in order to make claims processing agents more productive.

The IS group's recommendations were considered radical for a mammoth organization that relies heavily on a quartet of IBM and compatible mainframes. IS favored a series of interconnected token-ring networks that would support a new generation of health care applications based on client/server technology.

In short, the IS recommendation was innovative. It wasn't a plea for the necessary budget to move to a next-generation computing platform. Instead, the proposal dangled a carrot that caught Ross' attention and made him champion the project.

That carrot was a promise of significant savings in staff. IS managers calculated that by moving from a host-centric computing environment to a more distributed LAN setup, Pennsylvania Blue Shield could put a lid on hiring extra claims processors, despite 15% annual hikes in the number of claims received.

The managers estimated that moving to LANs would translate into a savings of almost $500 million over five years for manpower and overhead costs.

Going to heaven

Lowell Starling, Pennsylvania Blue Shield's corporate vice-president of IS, also saw Ross' challenge as an opportunity for the company's board to make a long-term commitment to the network project.

Starling, a former employee of Electronic Data Systems Corp. (EDS), borrowed a concept from his EDS days and suggested that upper management create a technology investment budget — a special capital allotment that would enable the IS group to experiment with the new technology without facing the pressure of typical return-on-investment (ROI) requirements.

With Ross' backing, the board approved the project and awarded the department a $5 million budget for expenditures that was treated more like research and development funding than a pure capital investment.

"We couldn't have asked for anything better," Buehler says. "From a technologist's view, it was like dying and going to heaven."

Now, a little more than a year after the project was approved, Pennsylvania Blue Shield has nearly completed the migration from its corporate leased-line network supporting IBM Synchronous Data Link Control protocols to distributed token rings bridged via T-1 lines to a token-ring backbone at the company's data center in Camp Hill, about 10 miles northwest of Harrisburg, Pa.

More than 800 personal computers are supported by seven file servers running Banyan Systems, Inc.'s VINES network operating system.

By year end, the company hopes to have more than 30 IBM Personal System/2 Model 80 or Compaq Computer Corp. SystemPro servers supporting client workstations. About 4,500 IBM 3270 terminals also at those sites are attached to the remote LANs via 3174 cluster controllers.

Rings everywhere

At the company's data center, two IBM 3090 and two Hitachi Data Systems Corp. mainframes are attached to a dual 16M bit/sec token-ring fiber backbone.

For redundancy, the IS group maintains two data center wings at its primary site in Camp Hill. In one wing, the two IBM mainframes are linked to the fiber backbone via an IBM 3745 front-end processor. In the other, the two Hitachi mainframes are linked to the backbone by separate IBM 3174 controllers (see graphic, this page).

IBM Token-Ring bridges on the backbone connect remote token rings at four different sites to the fiber backbone via T-1 lines.

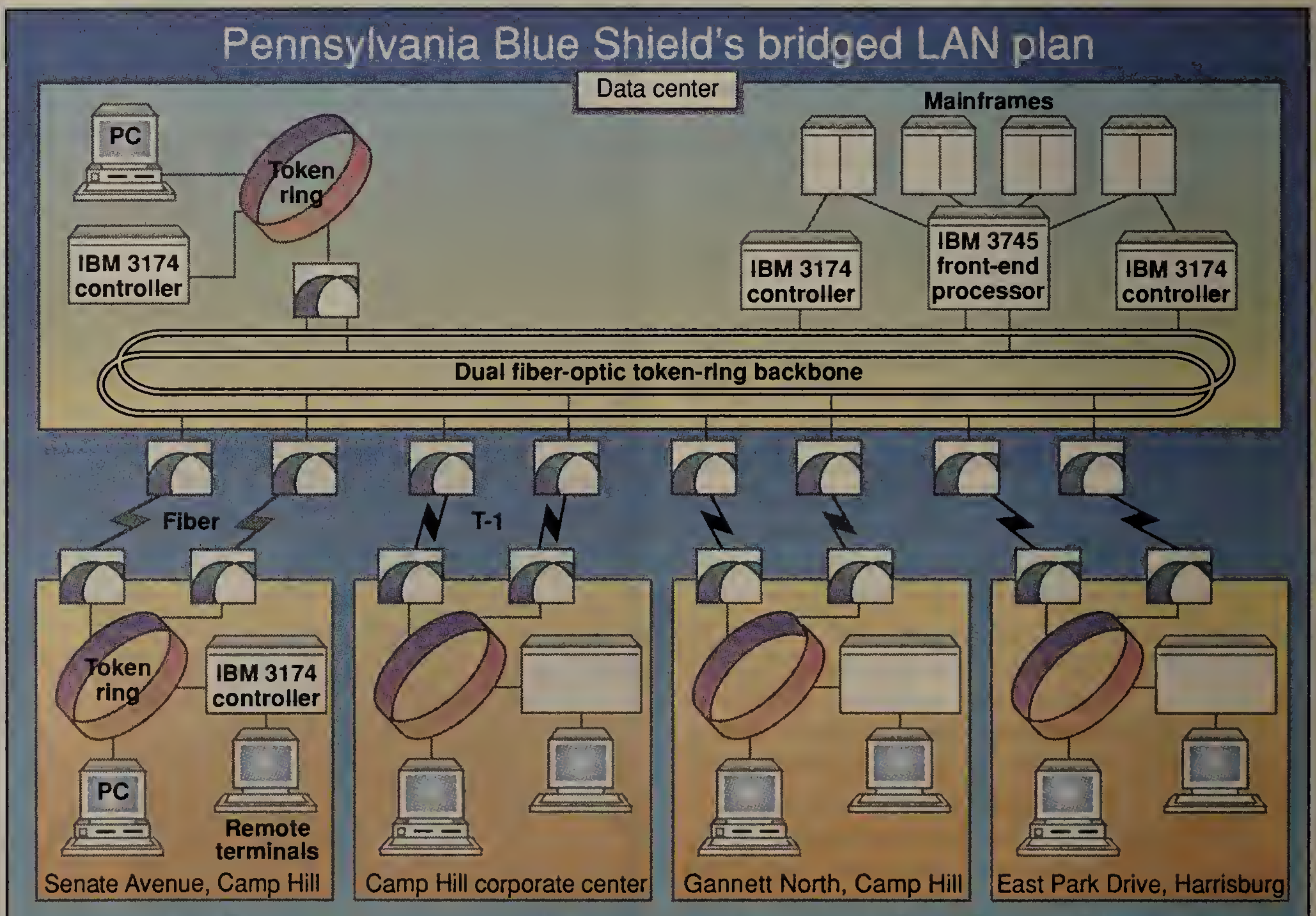
The setup contrasts sharply with Pennsylvania Blue Shield's previous environment, in which remote cluster controllers were linked via 19.2K and 56K bit/sec dedicated lines to an IBM 3745 front-end processor channel-attached to the mainframes.

In addition, one of the four hosts supported Network Systems Corp. Hyperchannel links to a remote claims processing center in order to provide the instantaneous terminal response time users need.

According to Robert Thomas, Pennsylvania Blue Shield's manager of network planning and design, the new corporate network will provide IS with a number of benefits far above any anticipated economic savings.

Perhaps the single greatest benefit is that the network will greatly simplify network node moves and changes.

"It just became too difficult to manage the network, from purely a physical point of view," Thomas says. More than 50% of Pennsylvania Blue Shield's employees are relocated within the company annually due to the high turnover rate of the jobs they perform.



Local and remote token rings link 3174 cluster controllers and PCs to a redundant bridge setup at each site that ties the sites to the data center via T-1 lines. A redundant fiber token-ring backbone at the data center provides access to hosts and supports peer links among LANs.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: PENNSYLVANIA BLUE SHIELD, CAMP HILL, PA.

Wiring closets resembled overflowing bowls of spaghetti, many with unmarked cables that made it difficult to determine which user was served by which line.

Now the company has installed a structured cabling system, with each building has a series of token rings. At Pennsylvania Blue Shield's headquarters, for instance, each floor has a 4M bit/sec token ring. Each of those horizontal LANs is interconnected via a 16M bit/sec riser token ring.

All the rings feed into a central wiring closet, where they are linked via a series of Andrew Corp. media access units (MAU). The MAUs, in turn, are tied into an IBM remote bridge that connects the site via a T-1 line to the backbone at the data center.

The company is also benefiting from the use of redundant links between remote sites. Every remote token ring supports two bridges, each with a single T-1 connection back to the data center backbone.

"Before, if you lost a controller, those users were down for some time," Thomas says. "Now [if a primary T-1 or bridge fails] all we do is reroute the traffic onto the backup bridge."

While Thomas admits that much of the bandwidth on those backup T-1 lines remains unused, he says the company committed to them to ensure capacity will be available as imaging and other bandwidth-intensive applications become available.

In fact, Pennsylvania Blue Shield plans to eventually piggyback voice traffic onto those data lines.

Therein lies the most important aspect of the new network setup, Thomas says.

"It sets the stage for us to support peer-to-peer networking and distributed applications," he says. "Our job was to put the infrastructure in place so application developers could write the new applications that would make agents more productive." (See "Porting applications to the LAN level," page 50.)

A secondary benefit allows the company to dispose of the Hyperchannel links, which it needed to maintain acceptable terminal response times on several hundred claims processing workstations at a nearby site. Thomas says the company will save $115,000 per year by terminating its Hyperchannel leases. In their place, the company installed two bridges at a total cost of $40,000.

Where credit is due

Pennsylvania Blue Shield's Buehler credited upper management with having the vision to support the move to a client/server architecture.

"We're used to a very frugal ROI formula here," Buehler says. He notes that proposed projects must undergo a rigid financial analysis, including a lease vs. purchase analysis before they are bid out to multiple vendors.

"That doesn't leave a lot of room to bring in technologies not 100% justified," Buehler says. "That kind of restriction was putting us in a catch-up mode with other companies that had the freedom to purchase what they wanted.

"But the technology investment budget gave us room to get around that," he continued. "Now we have the freedom to stake out a leadership position."

Imaging is one of the key strategic applications the company's IS department can now pursue, thanks to the technology investment budget.

"Having this money without having to generate a hard payback right away gives us time to get in on the front end of a new technology, as opposed to having to make a final, rock-bottom decision after the market has taken off," Buehler says.

The $5 million allotted in the technology investment budget was spent on building the fiber backbone and buying the IBM bridges and new 3174 cluster controllers needed to make the network fly.

Mike Kinsey, an internal con-

(continued on page 50)

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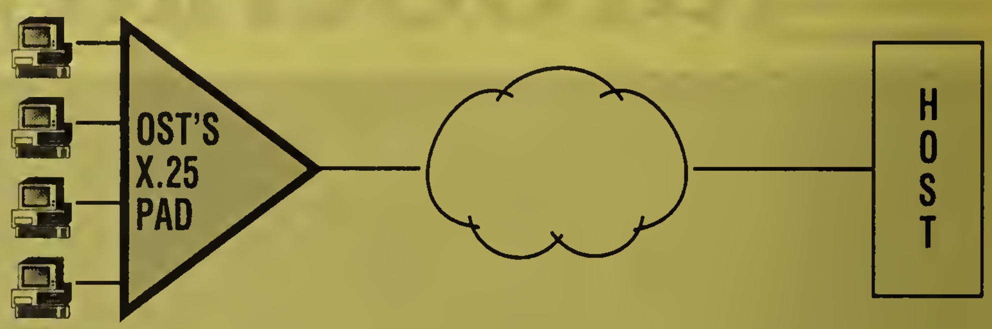

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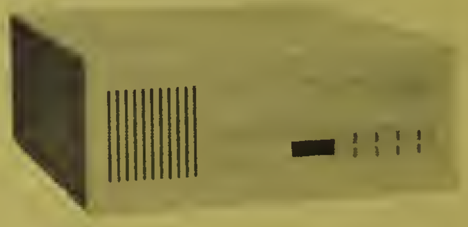

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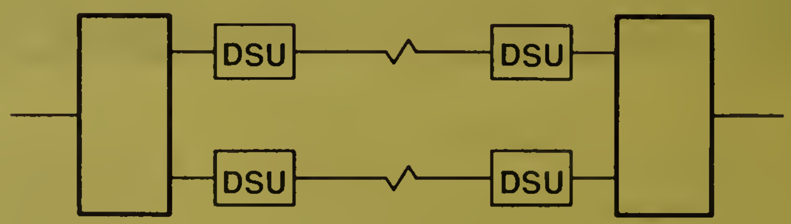

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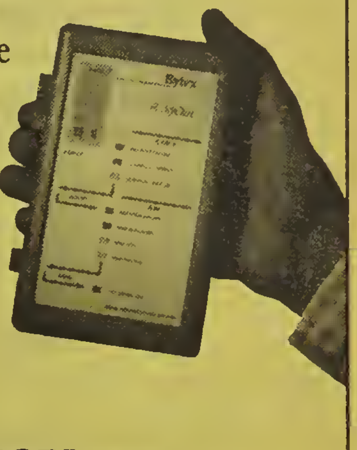

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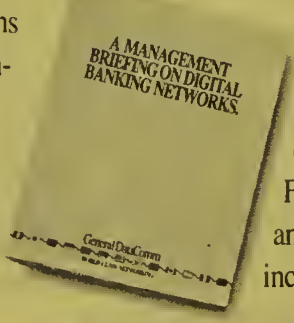

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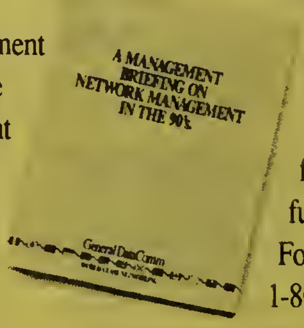

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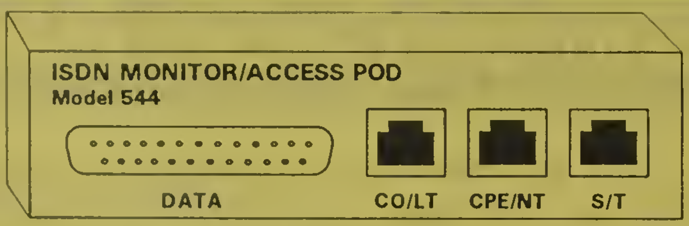

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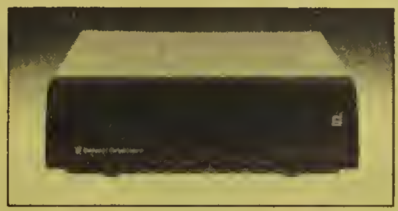

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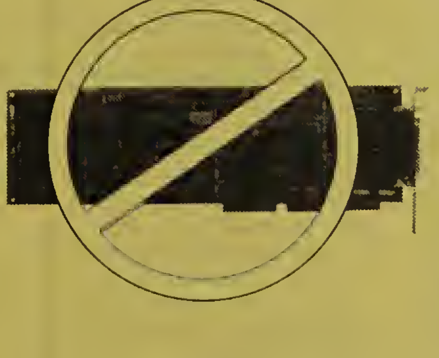

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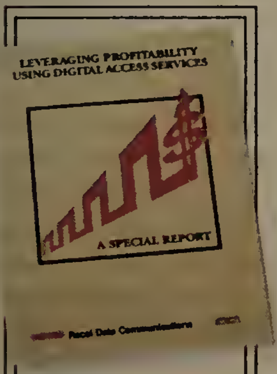
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Downsizing from top down

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sultant at Pennsylvania Blue Shield, explains that because the older 3274 and some 3174 cluster controllers did not support attachment to token rings, the company would have had to buy new microcode, adapter boards and extra memory to link the old controllers onto the token rings. "We'd have spent as much on that as for a new controller, so we decided to buy the new devices," he says.

In retrospect, Buehler says none of the changes would have been possible without upper management's firm commitment and its ability to communicate the importance of the project throughout the company.

"The key to making all this work was that we have a president who believes in what we're doing," Buehler says. "Without his support, none of this would have gotten off the ground."

Porting applications to the LAN level

Now that Pennsylvania Blue Shield has migrated to a series of interconnected Banyan Systems, Inc. VINES local-area networks, the company's information systems department can begin developing strategic applications to run on those LANs.

PHOTOGRAPHY ©1991 FRED PROUSER

Pennsylvania Blue Shield's Linda DuRussell

Currently, the company's LAN users are running DOS-based business applications such as word processors and spreadsheets.

Mission-critical applications, such as Pennsylvania Blue Shield's claim processing applications, still reside on a group of IBM mainframes and are accessed via IBM 3270-type terminals clustered throughout the firm's claims processing centers.

"Our primary goal over the last year has been to put in place the infrastructure to support the move to client/server applications," says Linda DuRussell, a communications programmer in the company's Information Strategy unit.

"Now that we've done that, our software developers can begin targeting which applications to port down to the LAN level," she says.

Shortly after Pennsylvania Blue Shield committed to installing token-ring technology, the company began searching for a network operating system on which it could build client/server applications.

DuRussell says that after poring over all the major software products — including Novell, Inc.'s NetWare and Microsoft Corp.'s LAN Manager — the company chose VINES because of its simplicity to the end user. For example, Banyan's StreetTalk directory services feature makes it easier for users to find their way around the network.

"In a network as large as ours, with as many subnetworks, we had to make it easy for a user to move around," DuRussell says. "With StreetTalk, users don't have to know the address for a server or an application."

Now that Pennsylvania Blue Shield's users have had a taste of the power and services the LAN can provide, DuRussell expects them to begin porting applications to the LANs.

"This year, we expect to provide more applications on the LANs," she says, adding that electronic mail and a common graphical user interface are top priorities.

Longer term, the firm is thinking about facsimile services and groupware products, such as Lotus Development Corp.'s Lotus Notes. Some groups within Pennsylvania Blue Shield are even thinking about integrating imaging applications onto a VINES net.

Still, the company hasn't yet committed to migrating its bread-and-butter claims processing applications to the VINES nets. "We're investigating it right now," DuRussell says. "Our current data bases for those applications are extremely large. We have to evaluate our storage needs."

DuRussell says there's a possibility that Pennsylvania Blue Shield may strike a compromise and distribute some portions of the application to the LANs while reserving the IBM mainframes as massive file servers capable of providing data base and archiving services to LAN users.

"But that's still a ways off," DuRussell says.

— *Charles Bruno*

Women in communications

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international responsibilities, a direct line to the chief executive officer and a six-figure salary.

"I haven't seen a single female applicant with the requisite experience," Freedman says.

In contrast, many male managers are able to incorporate those items on their resumes after less than a decade of experience. As a result, their salaries begin to climb beyond those of women who may have previously been on equal financial footing.

Cultivating professional recognition can bolster a manager's chance of winning critical promotions. Many of the managers interviewed report that they devote a lot of personal time to serving on industrywide, standard-setting committees, speaking at conferences, as well as making themselves available for interviews with trade publications.

Those who lack this recognition typically find that their careers are dominated by project-oriented assignments for which others can take credit. Acquiring the authority over even a small department often takes far longer for females than it does for male colleagues with similar job experience.

"I was the first woman to be made senior vice-president in an operations division," says Frackman, referring to the bank that hired her in 1965. Her division had 9,000 employees back then. "If I'd have been a man, I would have been made a senior vice-president several years earlier since I'd have had much more responsibility and was doing far better than the men who were getting promotions before me. I was constantly being told I had to do this, I had to do that — all of which were things that no man had to do."

Such blatant discrimination is rare these days, and many of the largest companies have earned a reputation for fostering women's careers, in part by creating policies that permit telecommuting and flexible schedules.

For example, Donna Collins, a network project manager at Apple Computer, Inc., manages a seven-site videoconferencing enterprise that's expected to more than double in size this year. When the program expands, she'll manage approximately six people while working at least part time from home.

Collins is confident that her own supervisor will continue to help her achieve the necessary visibility by ensuring that she receives suitable credit for successful projects.

On the whole, senior managers spend about 60 hours a week on the job, much of it at the office. They are expected to spend a great deal of personal time, as well as some vacation days, on the road and at conferences. Such constraints are equally imposed on men.

"It has more to do with the level of the position and the price you pay for increased levels of responsibility," Mersereau says.

How many rungs?

Yet many female communications professionals still feel stymied from reaching the top, and more often than not, they cite opposition from within MIS as the primary cause.

And as the manager who suggested mothballing her company's mainframe quickly discovered, endorsing just one highly threatening suggestion can reverse years of attempts at building interdepartmental good will. She was suddenly aware that a "good old boy" network was convening meetings to which she wasn't invited. And she was hardly surprised to see the downsizing venture lose ground.

The manager says she wonders whether the project may have been flagged to die from the outset. If it does, her career at the company may be permanently sidetracked. And countering such firmly entrenched opposition is nearly impossible. "They can really kill you. They can either murder your reputation or get you so frustrated that you go somewhere else," she says.

But other women speak ardently of not giving up and not giving in to the occasional temptation to single-handedly attempt to redress persistent inequities.

Every manager reported a fairly equal mix of men and women who reported directly to them and spoke strongly of needing to adhere to a gender-blind promotion policy.

Most female managers say they experience substantial emotional and professional support from their own senior executives. As a rule, these women feel that they've won the right to voice their opinions, though a few wonder if their willingness to articulate potentially unpleasant topics may ultimately prove politically damaging.

And while a few senior female telecommunications managers may opt for less demanding career paths, many more women continue to enter the field. The odds are in their favor. As their numbers grow, it becomes more likely that some women will rise to the top.

Letters

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tures on as many access levels as are not needed or used regularly. Also, make sure your company's phone bills are checked closely every month. If not, the problem can go unnoticed for years.

It's up to you to take steps to protect your company. Some long-haul carriers have programs set up to help you accomplish this task, but most do not.

It may be wise to discuss this with your carrier to find out how it handles the problem, and what steps it recommends you take to protect your firm. If you don't get satisfactory answers, maybe you should consider switching carriers.

Jeffrey Kagan
President
Tele Choice Consulting, Inc.
Marietta, Ga.

What about alternatives?

Somehow I think I'm not alone in disagreeing with John Enck's opinion column ("Time for TCP/IP to go back to sleep," *NW*, April 22).

Mr. Enck points out two flaws in the Transmission Control Protocol/Internet Protocol suite, specifically that Telnet (the protocol responsible for remote terminal access) was originally designed for simple teletypes and that the File Transfer Protocol (FTP) requires that users know something about the files they plan to transfer.

Telnet has been supplanted by the TN3270 protocol, which permits simple asynchronous terminals to access IBM 3270 block-mode applications; by the X Window System, which provides a standard networked windows environment; and by various terminal-type options added to the Telnet protocol. These new options define terminal types so that users have access to more sophisticated devices than Telnet's original "glass teletype."

FTP has likewise been supplanted by Sun Microsystems, Inc.'s Network File System, a protocol that provides a file-sharing mechanism among diverse computer systems, and by some clever FTP implementations that check file type and set appropriate file-transfer options for the user.

What is missing from Mr. Enck's column are alternatives to TCP/IP. While Systems Network Architecture and DECnet provide powerful tools, they are narrow in scope, basically limited to supporting devices provided by their respective parent vendors, IBM and Digital Equipment Corp.

Open Systems Interconnection creeps closer each year, but complete products are unavailable in the marketplace today.

In the meantime, TCP/IP provides a proven, flexible, manageable platform for multivendor environments. No, TCP/IP is not perfect. However, it is the most mature and most complete tool available for today's multivendor environments.

Douglas Blair
Systems engineer
Apple Computer, Inc.
Cleveland

ICA hosts quiet conference

continued from page 2

"Many companies, including ours, are retrenching," said John White, president of the Information Technology Group at Texas Instruments, Inc. and a featured speaker at the ICA executive program.

"We're trying to make better use of the technology we have. That means focusing on developing innovative applications using existing core technologies," White said.

As network departments try to optimize existing technologies, many net managers are apparently staying home rather than scouting out the latest technological advances at conferences. Indeed, there was a noticeable drop in attendance (9,100 this year vs. 10,500 last year) and exhibitors (190 vs. 230) at the show, a trend that started two years ago.

While the recession has undoubtedly cut into travel budgets and staff cutbacks have made it difficult to leave the office, the slowdown at the ICA gathering is symptomatic of deeper changes occurring within the industry.

To get the most from existing technologies without falling behind, many companies are beginning to adopt the practice of leapfrogging — that is, skipping a generation of technology before purchasing new products instead of implementing each advance as it becomes available.

"Many companies are looking for ways to stretch the life span of their existing technologies and then leapfrog to a whole new generation of products," said Michael Kilbane, ICA conference chairman and manager of systems development at Diamond Shamrock R&M, Inc. in San Antonio, Texas.

New roles

For many networking professionals, retrenching also means trying to get used to the idea of being a business manager instead of a technical specialist.

The pace of technological change in recent years has thrust network professionals into new management roles, sometimes before they have been willing or ready to fill them.

Moreover, as technologies have become more strategic to business operations, network managers are taking on a more visible role within their companies. They need to understand a broader array of technologies and know how to apply them to support business strategies and facilitate organizational change.

This evolution is clearly reflected in Kilbane's career path.

When he joined the ICA, he was a manager of voice services and had a background in programming and technical operations. Recently, he was assigned to manage systems development, where his major responsibility is to apply information technologies to solve business problems. This position not only requires knowledge of voice and data communications and data processing technologies, but a strong understanding of the business as well, he said.

Rethinking vendors

Besides rethinking their roles, network managers are reevaluating their relationships with suppliers.

"We used to chase prices and change from one vendor to another on a monthly basis," said one net manager at a large manufacturing company who requested anonymity. "At one point, we were using every terrestrial and satellite supplier of voice services there was."

The company has since significantly reduced the number of network suppliers it uses by selecting a preferred supplier for every product and service it uses. By establishing closer ties with a smaller number of suppliers, the company now gets better prices and service than before while reducing overhead costs internally.

This was underscored by ICA keynote speaker James Robinson, chairman and chief executive officer of American Express Co., who urged ICA attendees to establish longer term partnerships with select suppliers. Robinson said such relationships can dramatically improve quality and competitiveness.

"The future will belong to those companies that seek out and work closely with suppliers," he said.

Quest accesses SQL data bases

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er SQL data bases and that GUPTA is instead looking to build on its strength of offering software for flexible SQL data access.

GUPTA also announced the Quest Open Toolkit so developers can add functionality to Quest. By adding such applications as charts, business graphics, statistics, maps and data base publishing, developers can combine the data query features of Quest with other programs. With the Windows interface, these programs can be accessed by simply selecting icons on the Quest menu bar.

Quest costs $495 for a version supporting GUPTA's SQLBase Server and IBM's DB2. This version is expected to begin shipping Aug. 15. Support for IBM's OS/2 Extended Edition, Oracle, Microsoft's SQL Server, and Novell's NetWare SQL will follow with a Nov. 15 release date. Quest Open Toolkit will be available at no charge to qualified third-party developers.

Software centralizes CICS control

continued from page 2

such as CICS.

The need for the new option stems from the fact that, in an effort to increase availability, many users configure CICS so that multiple copies handle a specific application or group of related applications. Each copy is considered a CICS region, and it is not unusual for users to have 10 or 20 regions in a network, said Mack Phelps, a staff programmer at IBM.

CICS Automation Option consists of two software components. One runs in each CICS region and forwards data to the other, which runs at a central location as part of NetView, Phelps said. In that fashion, any CICS region can be monitored and controlled from a single NetView console.

> "All your console automation is being focused into a single NetView console," Treuil said.
>
> ▲▲▲

Previously, users had to log on to each copy of CICS separately to view status.

"All your console automation is being focused into a single NetView console," said Evelyn Treuil, also an IBM staff programmer. "What's even more important is it's not just for one MVS system, but for your entire enterprise."

Another feature of CICS Automation Option is the ability to monitor LU 6.2 sessions used to communicate between CICS regions, detect when they go down or when response time exceeds user-defined thresholds and then automatically recover the link.

If there is a physical link involved, as when the CICS programs are on separate hosts, NetView would also detect the outage. But the CICS Automation Option still adds value.

"NetView will detect that the session is gone but not necessarily that it's a more important session than all the other sessions that it has to keep track of," said Heather Kreger, also an IBM staff programmer.

CICS Automation Option can be programmed to track scheduled outages and report only unscheduled CICS failures, according to Kreger..

The product also helps reduce staff requirements by automating routine tasks. For example, it works with other IBM products to help recover CICS regions following a major outage, such as a VTAM failure.

In this scenario, NetView and the recently announced Automated Network Operations/MVS, which is a more generic automated operations tool, handle the recovery of the physical network sessions, Kreger said. CICS Automation Option recovers logical sessions between CICS and VTAM or between separate CICS regions.

That allows users to plan the order in which applications should be automatically brought on-line following an outage, rather than making those decisions in the heat of the moment.

In addition, CICS Automation Option provides a facility that lets users write a program to ensure that any application or data base running in a CICS region is active. Such programs can be scheduled to bring various applications up or down as user requirements dictate.

Available now, CICS Automation Option/MVS has a basic one-time charge of $18,400 and a Distributed System License Option charge of $13,800. NetView Release 3 for MVS/ESA or MVS/XA and other prerequisites are required.

Carriers get nod for Intersputnik

continued from page 23

IDB says it is ready to provide Intersputnik service via an earth station on Staten Island, N.Y. AT&T plans to provide the service via an earth station it is installing in Roaring Creek, Pa., while TRT/FTC plans to either lease earth station capacity from other carriers authorized to provide Intersputnik service or, if sufficient demand arises, build its own earth stations.

New policy

The FCC is approving the requests now because of major INTELSAT policy changes last year that effectively dealt with the organization's objections to the provision of international private-line services via competing satellite systems.

At that time, INTELSAT said it would not object to carriers using competing satellite systems to lease up to 100 international 64K bit/sec circuits to support international switched services.

At a Board of Governors meeting this month, INTELSAT is expected to use this new policy to formally approve a request by the U.S. government to let American carriers lease a total of 90 64K bit/sec Intersputnik circuits to provide international switched services. Germany is expected to gain access to the remaining 10 circuits.

Once INTELSAT approval is received, the FCC is expected to divide the 90 U.S. circuits among the American carriers that have applied to use them, including AT&T, IDB and TRT/FTC.

The FCC must wait for INTELSAT approval because INTELSAT is an international treaty organization and the U.S. government wants FCC regulations to coincide with INTELSAT rules.

But the government is also mulling a request by Alpha Lyracom Pan American Satellite Corp. to make U.S. regulations go beyond current INTELSAT rules by ending all restrictions on the provision of international switched services by satellite service providers that compete with INTELSAT.

A decision on that request is expected soon, according to the Department of State.

Int'l carriers to recognize cards

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tional costs of maintaining the carrier relationships, Vardy said, "My guess is that there will be a small markup to cover the cost of additional facilities."

But any added charge is likely to remain small. "The service is essentially a courtesy to our customers," he said.

AT&T, KDD and British Telecom will use Common Channel Signaling System 7 to query one another's calling-card data bases.

The consortium is eager to see other countries join the calling-card service, but Vardy acknowledged that bringing others aboard may not be an easy task.

"There are two main difficulties in extending this across Europe," he said. "Some of the nets and signaling systems are not as developed as KDD or others." Secondly, "there is not a well-developed card system across Europe. In some countries, there are no charge cards at all."

But the consortium is ready to assist foreign carriers. Vardy said British Telecom is involved in discussions with some smaller European carriers that do not want to make a major investment in switching systems because of their limited customer case.

"One or two smaller European countries may want to use the British Telecom network," he said.

The consortium will hold another world conference later this year and hopes to attract carriers from Asia, as well as Central and South American countries.

DEC revises OSI support strategy

continued from page 1

program interfaces (API) needed to hook existing applications to any of the transport protocols supported under the plan. This would enable a user with an OSI application, for instance, to use a DECnet or TCP/IP network to transport data to other nodes.

The strategy differs vastly from DEC's original plan to only support OSI transport protocols under its DECnet Phase V program. That would have forced users to modify existing applications in order to use a Common Transport Interface API, which provides access to an OSI backbone for data transmission.

In addition, Advantage-Networks specifies use of the Integrated Intermediate System to Intermediate System routing protocol, an emerging standard that enables different vendors' routers to exchange DECnet Phase IV, OSI and TCP/IP traffic. The strategy will also enable users to continue employing DECnet Phase IV routers to forward DECnet traffic, as well as TCP/IP-specific routers to pass TCP/IP traffic.

> DEC was forced to rethink its strategy because OSI is not fully mature.
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"Advantage-Networks allows applications running on different vendors' systems to share a common network," said Richard Malone, a principal with Vertical Systems Group, a Dedham, Mass., consulting firm. This will obviate the need to build separate physical or logical networks to support different systems, he added.

But Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C. consulting firm, said DEC was forced to rethink its strategy because OSI is not fully mature and customers need to solve network problems today. "This is a marketing ploy that indicates DEC's need to support TCP/IP because of the delay [in developing DECnet Phase V for VMS]," he said.

At the announcements, DEC said it will not deliver a version of DECnet for VMS supporting native OSI protocols for another 12 months.

At last week's briefing, DEC announced a series of products and enhancements that support the Advantage-Networks strategy, many of which were expected ("New DEC, HP routers ready for ICA debut" and "DEC announces bridges," *NW*, June 3).

The vendor's new DECnet/OSI for Ultrix Version 5 software adds DECnet Phase IV and OSI protocols to workstations or minicomputers running Ultrix that previously supported only TCP/IP. The package supports X/Open Co., Ltd.'s X/Open Transport Interface (XTI) — an API that links Ultrix applications to either OSI Transport Class (TP) 4, Unix Datagram Protocol or TCP-based backbones — as well as a module that enables DECnet Phase IV applications to communicate over the Internet national research network.

Available now, the software enables users for the first time to ship data between TCP/IP applications using an OSI transport protocol or OSI applications over a TCP/IP net. The initial release also supports OSI's File Transfer, Access and Management (FTAM) protocol, enabling Ultrix systems to exchange files with disparate systems running FTAM.

The package also supports DEC's Distributed Naming Service (DECdns), a directory service, and DEC Distributed Time Service (DECdts), which keeps system clocks synchronized.

The next release, due out by year end, will include support for OSI's Virtual Terminal Protocol, the Internet Engineering Task Force's RFC 1006 API that enables OSI applications to ride over TCP/IP networks and a version of XTI that provides a link to OSI-based nets.

DECnet/OSI for Ultrix Version 5 comes bundled with Ultrix at no additional charge. Existing DECnet for Ultrix users can upgrade for between $1,050 and $13,900.

The new DECnet-VAX Version 5.4 enables VMS-based systems to act as end nodes in a network supporting the Government OSI Profile. The package includes support for OSI transport protocols — TP 0, TP 2 and TP 4 — which enables users for the first time to build VMS applications that send data over OSI backbones, as well as an End System-to-Intermediate System module that enables VMS systems to forward data to an OSI-based router. It will also enable DECnet Phase IV nodes to exchange data using FTAM.

Available in August, the software supports DECdns and DECdts and comes bundled with every new VMS-based system. Existing DECnet for VMS users can upgrade for between $485 and $22,000.

DEC also announced a new OSI Application Developer's Toolkit that includes a series of APIs needed to help developers build DECnet/OSI for Ultrix or DECnet-VAX Version 5.4. applications. Scheduled for September availability, a VMS-based version costs $4,115, while an Ultrix version costs $3,890.

As expected, DEC also promised to deliver a high-end multiprotocol router within 12 months (see "IBM unveils high-end RISC router," this page).

DEC unveils high-end RISC router plans

ANAHEIM, Calif. — As expected, at last week's International Communications Association conference, Digital Equipment Corp. announced plans to offer a high-end multiprotocol Reduced Instruction Set Computer (RISC)-based router.

The company's Network Integration Server (NIS) 600 will support the Integrated Intermediate System to Intermediate System (IS-IS) routing protocol to forward Open Systems Interconnection, Transmission Control Protocol/Internet Protocol and DECnet Phase IV traffic between NIS 600s or other vendors' Integrated IS-IS routers ("New DEC, HP routers ready for ICA debut," *NW*, June 3).

DEC said the product is slated to ship in 1992.

"We don't intend to stop at just three protocols," said Bill Mitchell, wide-area network marketing manager for the vendor. DEC will enhance the NIS 600 by early 1993 to support Xerox Corp.'s Xerox Network System, Novell, Inc.'s Integrated Packet Exchange (IPX), and Apple Computer, Inc.'s AppleTalk II protocols.

The NIS 600 will consist of a chassis supporting seven interface boards controlled by a dedicated RISC chip manufactured by MIPS Computer Systems, Inc. The boards will be connected to a bus based on the emerging IEEE Futurebus II specification, which supports bus transfer speeds in excess of 500K bit/sec. The bus will be controlled by a DEC MicroVAX-based system processor. The RISC chip will swap data between ports on a single board, which frees up the backplane bus to pass data from ports on different boards.

Initially, the NIS 600 will support dual-port Ethernet boards, dual-port T-1 boards and eight-port 56K or 64K bit/sec boards. DEC will add interface boards that will enable the NIS 600 to route traffic across Fiber Distributed Data Interface networks, as well as private and public frame relay networks in early 1993.

Also due out in 1993 is a board supporting the emerging High Speed Serial Interface (HSSI) specification being developed by vendors such as T3plus Networking, Inc., which are building data service unit/channel service units (DSU/CSU) that provide access to T-3 circuits. HSSI will pass traffic from the router at up to 50M bit/sec to a T-3 Plus DSU/CSU as far as 50 feet away.

DEC is positioning the NIS 600 as a regional routing node that acts as a hub for low-end Integrated IS-IS routers in remote sites that support a single wide-area circuit, Mitchell said.

The remote sites will forward traffic to the NIS 600, which will route it directly to its destination. Without a hub, traffic from one remote site often must be passed through a series of other routers until it reaches its destination, which forces low-end routers to process unwanted traffic.

The NIS 600 is due to be beta-tested this fall and is scheduled to ship within 12 months. Pricing was not available at press time.

— Jim Brown

IBM pares prices of 4M cards

continued from page 2

also cause a price war in the 4M bit/sec market, where IBM has been facing growing competition. "This is good news for users," she said.

According to IDC's recently released "Analysis of the Local Area Network Hardware Market" report, IBM sold 78.3% of the 1.8 million token-ring cards shipped last year, including 57.7% of the 743,950 4M bit/sec token-ring interfaces shipped worldwide.

New price list

Effective June 4, IBM slashed the price of its 4M bit/sec Token-Ring adapters for Micro Channel Architecture machines from $772 to $395, and reduced the price of its 4M bit/sec Token-Ring interface for microcomputers based on the AT bus from $669 to $395.

IBM also trimmed the price of its 16/4M bit/sec Token-Ring adapters, which support 4M and 16M bit/sec speeds, from $957 to $895, a 6.5% reduction that offsets a price increase announced earlier this year. In addition, IBM decreased the price of its Model 8228 Token-Ring Multi-Station Access Unit, a hubbing unit, by 16% from $748 to $630.

Gary Thorn, product consultant for common channel management in IBM's national distribution division, said he expects competitors will "react as all competition acts when anybody takes a price decrease." But he does not anticipate a price war.

Analysts disagreed. "Token-ring vendors have been able to maintain a certain price level because IBM's prices have been relatively high," said John Dunkle, president of WorkGroup Technologies, Inc., a Hampton, N.H., consulting firm. "IBM's price cuts will force other token-ring vendors to do the same. This didn't use to be a commodity market, but it's now headed that way."

Competitors said they have no plans to respond, however.

"Our philosophy is that we have features and performance so far beyond other boards in terms of speed and low memory overhead that small dollar differences are not an issue," said David Ruby, vice-president of North American sales at Madge Networks, Inc. in San Jose, Calif. Madge Networks shipped 9.7% of all 4M bit/sec token-ring cards in 1990, according to IDC.

Nate Kalowski, vice-president of marketing at Proteon, Inc., IBM's chief competitor in the token-ring market, said his company needs to analyze the IBM reductions before making a decision about its own prices.

Because the IBM cuts bring Token-Ring prices more in line with Ethernet prices, Ethernet vendors may be tempted to respond with price reductions of their own, though at least one denied having plans to do so.

According to Dave De Puy, director of marketing for the network adapter division of 3Com Corp. in Santa Clara, Calif., his company has no plans to respond to IBM's new pricing.

3Com, which holds the biggest share of the Ethernet board market, sells its best selling EtherLink II cards for under $300, still considerably less than IBM's new $395 price tag for its 4M bit/sec Token-Ring card.

Carriers to link offerings

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According to Daniel Briere, president of TeleChoice, Inc., a Montclair, N.J.-based telecommunications consultancy, Cable & Wireless will not be allowed to support all of the advanced features that Mercury and Hong Kong Telecom support as part of their Global Virtual Private Network (GVPN) services with US Sprint.

GVPN includes such enhanced features as switched 64K bit/sec data. According to Briere, only one carrier per country will be allowed to support GVPN, and Cable & Wireless PLC has already agreed to let US Sprint take over the GVPN helm in the U.S.

But Briere and other analysts said that Cable & Wireless PLC's efforts to integrate global network offerings between its carrier units is a positive move.

"Cable & Wireless is like a puzzle with all the pieces lying on top of each other and not interlinked," Briere said. "Once they are interlinked, they will have a great advantage."

MCI shares net direction

continued from page 1

network platform — which will run in parallel with its circuit-switched network — would use 53-byte, fixed-size data packets to support broadband data services.

Although MCI officials did not commit to rolling out other broadband data services, Don Heath, MCI vice-president for data marketing, said the new platform could support technologies such as Switched Multimegabit Data Service and Asynchronous Transfer Mode. He also said the carrier will offer additional services if sufficient market demand develops.

According to Heath, the carrier will roll out the frame relay service for users who want to support connections between distributed data bases and high-bandwidth data applications, such as LAN-to-LAN and LAN-to-WAN interconnection.

The main benefits of the frame relay service are reduced transmission costs and improved performance and response times for high-bandwidth applications, Heath said.

"People today who can't afford a leased line between Point A and Point B may send data between those points if they can pay only for what they use," he said.

Although MCI did not release rate information for the new service, Heath said the firm will offer users the option of flat-rate or usage-sensitive charges.

Rates will be structured so customers are not penalized for peak traffic loads no matter which type of pricing they choose, he added.

Customers with a less well-defined sense of their data requirements may want to go with usage-sensitive pricing, Heath said. This pricing scheme will include a fixed fee, most likely charged on a per-port basis to reflect access costs, and then a usage rate element based on the number of kilobytes of information passed over the network.

Prices capped

In order to protect users from usage charges that could spiral out of control, MCI will institute a cap on charges. "If you want somebody to use this service and they don't really know their data requirements, they may end up paying a ton of money beyond what they [would pay] for a leased line," Heath said. "So to entice them, you charge a slight premium above what it would cost for a leased line per month and beyond that [the charges] will be capped."

Initially, access to the service will be over leased lines 56K bit/sec, fractional T-1 or T-1 speeds.

Data will be carried through the network on permanent virtual circuits to locations predefined in MCI network nodes.

The carrier plans to enhance the service later to support switched virtual circuits, which will allow direct dial-up transmission into the network. This support would enable users to send data between any two company's local-area networks, according to Heath.

MCI's new FocusNet management product is based on the Open Systems Interconnection/Network Management Forum reference model and runs on a Unix workstation. Initially, the management product will support alarm monitoring, trouble ticketing, network configuration and performance management functions.

Start-up offers FDDI adapters

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machines, the price is $1,995; the NP-EISA/S adapter used with EISA-based microcomputers costs $2,495; and the NP-VME/S adapter used with VME-based workstations is priced at $2,795. Those prices are for five or more workstations.

Network Peripherals also rounded out its existing FDDI adapter line with models that attach S-Bus and VMEbus workstations to fiber-based networks. The company began selling its AT and EISA products for fiber nets last year.

The new fiber-based NP-VME/S adapter is priced at $3,295, and its NP-SB/S adapter will cost $2,495.

The new wiring concentrator, the Workgroup Concentrator Hub, is a departmental hub designed to tie workstations and servers over fiber or shielded twisted-pair cabling. It can also link workstations and servers to an FDDI backbone.

The eight-slot concentrator supports as many as 16 shielded twisted-pair or fiber connections and features the Simple Network Management Protocol and Station Management support.

A Network Peripherals' FDDI Workgroup Concentrator Hub configured with four ports is priced at $7,995.

The company's direct sales force currently handles product orders, but Network Peripherals is setting up indirect sales channels that will include value-added resellers, OEMs and systems integrators.

According to Jennifer Pigg, senior analyst for data communications at The Yankee Group, a Boston-based market research and consulting firm, Network Peripherals' new offerings should provide "a quick fix to users that are constrained by current LAN bandwidth and have [shielded twisted-pair wiring] installed."

MCI to upgrade billing programs

ANAHEIM, Calif. — MCI Communications Corp. announced at the International Communications Association conference here last week plans to offer an electronic delivery option and other enhancements for its bills and call detail reports.

MCI officials said some of the first billing upgrades, which will be rolled out under the umbrella name MCI Select Billing, are currently in beta test and will be available later this year.

The Select Billing program will concentrate primarily on three areas — supporting multiple delivery mechanisms, providing information in customer-specified formats and supplying customers with application software that can be used to analyze billing data, said Andrea Postlethwaite Riedy, director of product marketing network management and billing services at MCI.

As part of its Select Billing program, MCI said it will begin testing this year delivery of 800 and Vnet invoices through electronic data interchange using the ANSI ASC X12.39 standard. The EDI invoices will be delivered via store-and-forward service on MCI Mail.

EDI billing, which will include telephone charges and call detail information, is expected to be delivered on a monthly basis, Riedy said. The service will be available next year.

AT&T already supports EDI billing for its Software-Defined Network, Tariff 12, 800, private-line and WATS services. An AT&T spokesman said the firm delivers the bill over its EasyLink electronic mail service at no charge to the customer.

MCI officials said some of the first billing upgrades are currently in beta test.

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MCI also expanded its MCI Portfolio Reporting option, which provides customers with summary reports of key statistics and costs across all network locations. The offering will now cover four other services: Vnet, T-1 access, MCI Vision and facsimile.

Later this year, the company will begin testing an electronic version of the reporting option, which will also be delivered via MCI Mail. MCI will supply customers with a software package for personal computers to manipulate and analyze call data.

Riedy said users will be charged a nominal fee for the software but customers will not have to pay E-mail charges for either electronic delivery of Porfolio Reporting or EDI billing.

MCI also announced it has expanded the capabilities of its Vnet location-level billing service from three to nine organization levels. Other enhancements include adding the capability for companies to allocate and distribute Vnet charges and volume discounts among several locations, provide customized selection of reports by location and assign individual 800 remote access numbers to any location in the company's billing hierarchy.

— *Anita Taff*

DEC bolsters architectures

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interact — is important for managing the overall computing environment. Within the next two years, DEC officials expect to determine how to define objects for the management of applications and data bases.

DEC also outlined the future of EMA. The EMA DECmcc platform, DEC's enterprise network management station, is currently supported on VMS and will be supported on Ultrix within the year.

DEC announced that it has granted a five-year license for DECmcc to Ing. C. Olivetti & Co., S.p.A., which announced that it plans to port DECmcc to Unix System V platforms. DEC officials said DECmcc could be supported on microcomputers as well as IBM and other Unix platforms within five years.

DEC officials said that within two years, EMA applications will integrate VMS and Ultrix system management and, within five years, systems and network management in multivendor environments.

DEC also last week introduced DECmcc access and function modules under the name DECmcc Extended LAN Manager to enable DECmcc management stations to control DEC Fiber Distributed Data Interface bridges and concentrators as well as DEC Ethernet bridges.

The DECmcc Extended LAN Manager includes access modules for the DECconcentrator 500 FDDI concentrator, the DECbridge 500 and 600 series of FDDI bridges and the DEC LAN Bridge Ethernet series.

The Extended LAN Manager also includes the Alarms Functional Module and the Bridge Performance Analyzer Functional Module. The functional modules process information collected by the Access Modules, allowing users to set alarms for the managed devices and track their performance.

The DECmcc Extended LAN Manager should be available in August. The Access Module package costs $2,950, and the Functional Module costs $1,180.

Separately, DEC has added support for DOS, Microsoft Corp. Windows 3.0 and Apple Computer, Inc. Macintoshes to its CDA, allowing users to create and share compound documents across different platforms on a DECnet network.

DEC added the support with the introduction of CDA Invokers, software that allows desktop systems to access a server-based CDA Converter Library to change documents from one format to another. A single server can work with Macintosh, Windows and DOS clients.

CDA Invokers, which comprise server and client components, should be available in August. Server media costs $240, and user licenses cost $100 each.

Internet monitor is firm's first

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One application Trakker is suitable for is call accounting and chargeback operations, Concord Communications' Zak said. By tracking connections, Trakker can create data sets for use by call accounting applications.

Another class of network management application is called "manager intervention," which enables a net manager to control events on the network.

One such feature already supplied with Trakker is called "kill connection." If a network manager decides to break a connection, a segment monitor can send the appropriate messages to the end nodes to initiate the smooth closing of the connection, Zak explained.

Trakker provides protocol analysis for the Transmission Control Protocol/Internet Protocol, the Network File System, DECnet and Local Area Transport, as well as link-layer monitoring of Xerox Corp.'s Xerox Network Systems, Novell, Inc.'s NetWare, Apple Computer, Inc.'s Appletalk and IBM's PC Network.

Trakker is available now and costs $18,000 for the management station software and $5,200 for each segment monitor. Until August, Concord Communications is offering the hardware, software and support to monitor two network segments for a price of $19,725.

Finalist details design of net

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data center to eight remote sites.

The company uses a variety of vendors' computers to support various applications, including an IBM MVS/ESA mainframe; a Control Data Corp. Cyber 180/830 system; Digital Equipment Corp. PDP 11/83s and MicroVAXes; Tandem Computer, Inc. minicomputers; and a Hewlett-Packard Co. HP-1000.

Like most companies, in the 1980s Delmarva Power installed separate nets to support each application or host. A Racal-Milgo T-1 network installed in 1987 provided a single physical backbone, but the networks were still largely unable to share data.

In 1989, a company task force decided to use the Transmission Control Protocol/Internet Protocol to build a corporatewide internetwork that would improve performance and let the company's systems share data.

The internet was initially cost-justfied based on the need to improve the performance of a computer-aided design net that used 56K bit/sec wide-area links, Scoggin said. Delmarva Power installed a Wellfleet Concentrator Node (CN) bridge/router in its data center and linked it to smaller Ethernet-attached Wellfleet routers at remote sites.

The Wellfleet CN was tied to each remote router via a 672K bit/sec channel on the company's T-1 backbone, which is supported by a 200-route-mile private fiber and microwave net.

The company then set out to overcome its biggest challenge: integrating its Systems Network Architecture traffic into the same 672K bit/sec channel, forming a multiprotocol backbone.

To enable SNA data to be fed to the Wellfleet CN, the company installed a McDATA Corp. 6100E Network Processor at the data center to provide an Ethernet link for IBM hosts. To the host, the channel-attached 6100E looks like an IBM 3174 controller. The 6100E encapsulates SNA packets in International Standards Organization 802.2 Logical Link Control frames, which can be carried over Ethernet and bridged over the 672K bit/sec link to remote sites by the Wellfleet CN.

IBM host-based TCP/IP software provides support for such TCP/IP services as the Telnet virtual terminal protocol, File Transfer Protocol and the Simple Mail Transfer Protocol for electronic mail.

The company's personal computer users traditionally accessed the IBM hosts via a 3174 with a 19.2K bit/sec link to a front-end processor. This configuration was replaced by linking channel-attached 3174s in the data center to a token-ring LAN, which in turn is attached to a Banyan Systems, Inc. VINES server.

The server, also linked to an Ethernet in the data center, runs Banyan software that strips SNA headers and replaces them with both a VINES IP and a standard IP header, then sends SNA packets out to the multiprotocol backbone through the Wellfleet CN.

Banyan servers at each remote site running the same software strip the IP header, leaving only the VINES IP header, which enables SNA packets to be carried over the Ethernet to the appropriate workstation.

That configuration provides subsecond response time for 3270 applications, as opposed to the three-second average of the old configuration, Scoggin said.

The company is in the process of outfitting its other hosts with TCP/IP software that will allow them to exchange data with each other, he added.

Schools mull T-3 network

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gomery said. "We want to go beyond that and offer our students real network experiences."

All universities that offer degree programs or a concentration in telecommunications can participate in TERN. They will be asked to commit the manpower and funding necessary to launch and maintain the project. In addition, participating schools may be asked to lend personnel to participate in planning committees, net operation and research, Montgomery said.

TERN will be a three- to five-node T-3 backbone network with tail circuits extending to participating universities. Users would access the backbone via Switched Multimegabit Data Service, T-1 or T-3 links, according to Montgomery.

The backbone nodes would be located at institutions with the technical resources needed to run and maintain the network, Montgomery said. Each backbone node would consist of one or more network switches capable of supporting technologies such as frame relay, cell relay and Integrated Services Digital Network, Montgomery said.

TERN will feature a central net management system located at a headquarters site yet to be determined. The system would have control over net management systems at each backbone node that are used to manage smaller end nodes, Montgomery said.

Montgomery, Sobczak and Martin Weiss, an assistant professor at the University of Pittsburgh, have already begun meeting with local and long-haul carriers, computer and network vendors, switching systems vendors and systems integrators to solicit support for and commitment to TERN.

Senate in favor of RBHC bill

continued from page 1

tee largely depends on action by Markey.

Markey supports S. 173, said an aide, who added that the congressman would prefer to look at the prohibitions in the Modified Final Judgment more broadly than focus on just the equipment manufacturing ban.

Last year, Markey held extensive hearings on a broad Modified Final Judgment bill but never introduced it. This April, the representative began circulating a new draft bill among House representatives, the regional Bell holding companies and other industry groups, for comment.

That draft bears close resemblance to Hollings' bill in that it would require the RBHCs to manufacture in the U.S. at least 60% of the equipment components they sell while assembling domestically all of the products they offer. But the draft reaches out into other areas as well, stipulating network quality requirements for the RBHCs and consumer protection clauses.

> A Bell Atlantic spokeswoman acknowledged, "We haven't precluded teaming with foreign companies."
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Blow to AT&T

Last week's victory in the Senate for the RBHCs was a staggering defeat for AT&T and a host of equipment manufacturing competitors that had lobbied furiously against the bill's passage.

In an eleventh-hour attempt to defeat S. 173, Robert Allen, chairman of AT&T, joined with representatives from other vendors and associations in writing a letter to Sen. Brock Adams (D-Wash.) condemning S. 173.

"S. 173 will jeopardize thousands of existing jobs, increase foreign product sales, upset the current positive balance of payment in high-end telecommunications products, erode U.S. research and development capability, and create incentives for anticompetitive behavior on the part of the [RBHCs]," the letter stated.

The letter was signed by Allen and representatives from Allnet Communications Services, Inc., the Computer and Business Manufacturers Association, the Consumer Federation of America, Comdial, the Competitive Telecommunications and Equipment Association, the Independent Data and Communications Manufacturers Association, Inc., the North American Telecommunications Association, Rolm Corp. and the Telecommunications Industry Association.

Even U.S. District Court Judge Harold Greene became involved in the stir on Capitol Hill. Greene, asked by Sen. Paul Simon (D-Ill.) for his opinion, weighed in last week with a nine-page letter against lifting the equipment manufacturing ban.

Greene called regulation futile in policing the RBHCs for anticompetitive practices such as cross-subsidizing.

He noted that the National Telecommunications and Information Administration had concluded in 1987 that entry into manufacturing would mean the RBHCs "will join forces with mammoth manufacturing empires — mostly foreign — and that this will pose a substantial risk of destruction of the U.S. central office equipment manufacturing industry."

During Senate debate, Sen. Daniel Inouye (D-Haw.) proposed an amendment to S.173 that would place a cap on the amount of equipment the RBHCs could buy from themselves in order to eliminate possible self-dealings. Although Hollings rejected the amendment, he promised to bring it up again in conference after any future House vote on his bill.

Likely RBHC action

The highly competitive nature of telecommunications equipment manufacturing raises the question of how the RBHCs would fare in this market. While some of the Bells were circumspect when questioned about possible manufacturing plans, a spokeswoman for Bell Atlantic Corp. offered some comment.

Citing the company's lack of experience, she said Bell Atlantic is more interested in partnering with other firms than in manufacturing equipment.

In response to allegations by S. 173 opponents that the RBHCs would join forces with foreign enterprises, she acknowledged, "We haven't precluded teaming with foreign companies." But she added that Bell Atlantic is hearing more requests from U.S. manufacturers regarding joint ventures.

Bell Atlantic has no interest in manufacturing central office switches, she emphasized. Likewise, telephone handsets, multiplexers and other customer premises equipment holds little allure, although the carrier might consider developing a special handset for caller identification.

Bell Atlantic is interested in voice recognition systems and the development of equipment for advanced cellular applications such as personal communications networks.

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ROLM's Debbie Walsh makes it her business to keep Empire Blue Cross and Blue Shield fully covered.

For someone who never gets sick, ROLM® representative Debbie Walsh certainly spends a lot of time at Empire Blue Cross and Blue Shield. That's because Debbie puts a premium on personal service. And because Empire Blue Cross and Blue Shield is constantly on the lookout for more productive ways to improve service and communicate with its many customers.

There was the time Empire asked Debbie how to tie together its voice, imaging and data processing technologies. She recommended CallPath.™ With CallPath, customers can have many of their questions answered simply by calling Empire and entering their account number on the telephone keypad. From there, a computer retrieves the account information and relays it to the caller.

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CallPath and PhoneMail help Empire Blue Cross and Blue Shield answer over ten million phone calls a year. Of course, Debbie Walsh is always there with a few answers of her own. For more information, call ROLM at 1-800-624-8999 ext. 235, or your authorized ROLM Business Partner.

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